Model 5100S/5500S
Service Manual

Mainboard
D/D board
Inverter board
Hard transfer board

Specifications are subject to change without notice. **October, 2000**

Contents

System specifications

The 5100S/5500S uses the SiS630S core logic and InSyde BIOS code. This product also features three bays for user-installed modules (a HDD, a CD-ROM or DVD-ROM or a FDD), and has an optional Fax/Modem MDC module.

The main unit of the Model 5100S/5500S Notebook PC has the following components:

- Intel Mobile Pentium III with AGP technology-based mainboard, using the SiS630S chipset solution supporting SDRAM with 0 MB on-board DRAM, expandable to 32MB, 64MB, 96MB, 128MB, 192MB, 256MB, or 512MB using one or two expansion S.O. DIMMs
- user-installed modules: CD-ROM, DVD-ROM and an FDD
- main storage (HDD) bay: principal HDD, 2.5” up to 12GB(Ultra DMA33/66)
- User interfaces:
  - one internal keyboard, 84 keys (depending on the language)
  - one built-in trackpad
  - one 800x600 SVGA TFT 12.1” LCD display panel with CCFT backlight
- Power Solutions
  - power bay: battery pack
  - AC/DC adapter

CPU (µPGA2)

Intel Celeron-450	(1.6V)
Intel Celeron-500	(1.6V)
Intel Celeron-550	(1.6V)
Intel Celeron-700	(1.6V)
Intel Pentium III-600 *	(1.6V)
Intel Pentium III-650 *	(1.6V)
Intel Pentium III-700 *	(1.6V)
Intel Pentium III-750 *	(1.6V)
Intel Pentium III-850 *	(1.6V)

* with Intel SpeedStep Technology

CD-ROM (MKE CR175) 24X removable module

CD type	12.8cm
Height	12.7mm
Data transfer rate	3600KB/s (max)
Random access time	<100ms
Compliance	Multimedia PC-2 Spec.
Transport	drawer type load/eject
Interface	PCI local bus master IDE

FDD

removable 3.5" 1.44MB

Memory

L2 Cache (on die)

Celeron(.18) series	128KB
Pentium III series	256KB

On board RAM	0MB
Upgradable to	512MB (MAX.)

BIOS

InSyde	256KB

HDD

Removable module	up to 12GB
Drive size	2.5"
Height maximum	12.7mm
Average access time	<13ms
Interface:	PCI local bus master IDE with Ultra DMA33/66 I/F

Keyboard

Keys	84
Fn key support	YES
Integrated numeric keypad	YES
Inverted "T" layout cursor keys	YES

TouchPad

built-in	x 1
Interface	PS/2

Power Supply

AC adapter	
AC-in	100-240V 47-63Hz
Capacity	65W
Battery pack	Li-Ion

Physical

Dimension	316mm(W)
	256mm(D)
	38.5mm(H)
Weight	3KG (with Lithium-lon battery)

Packaging (standard)

AC/DC adaptor & power cord	x 1
User™s manual (printed format)	x 1

(Optional)

Car adapter	x 1
Smart Li-Ion battery pack	x 1
S.O. DIMM	32MB/64MB/128MB/256MB
Fax/modem module(56K, MDC)	x 1
DVD-ROM (X8)	x 1
CD-RW	x1

Audio

3D, Sound Blaster compatible	YES
Built-in speakers	2
Built-in microphone	1
External Audio Jacks	
Speaker-out Jack	YES
Microphone-in Jack	YES

Power Saving Management

Doze mode	YES
Sleep mode	YES
Suspend/Resume mode	YES
Suspend to HDD mode	YES
Hot key control suspend	YES
APM ver 1.2 support	YES
ACPI Ver 1.0 support	YES

LCD TFT/DSTN

Backlite	CCFT
Size	12.1"
Resolution	800x600
Color (CRT)	16,77M
Monitor	1280x1024
Support	non-interlaced

Display

LCD/CRT (simultaneous)	YES
VGA/EGA/CGA/Hercules compatible	YES
AGP 3D graphics accelerator	YES
Adjustable brightness (TFT)	YES

Ports

Serial port	x 1
IrDA/SIR/ASK/FIR	x 1
Parallel port	x 1
15 pin external video port	x 1
External 101/102 keyboard port/ PS/2 mouse	x 1
PC Card Standard Type I	x 1
Modem (RJ-11) port for MDC	x 1
USB connector	x 1
speaker-out jack	x 1
microphone-in jack	x 1
LAN (RJ-45) port	x 1

Chipsets

SiS630S

- provides a high performance/low cost Desktop solution for the Intel mobile CPU based system
- integrates a high performance North Bridge
- has an advanced hardware 2D/3D GUI engine, Super-South bridge or an external AGP4X Slot

The SiS630S is a system-on-chip solution that complies with

- Easy PC Initiative which supports Instantly Available/OnNow PC technology
- USB
- Legacy Removal
- Slotless Design and FlexATX form factor

The SiS630S:

- integrates UltraAGP™ technology and advanced 128-bit graphic display interface.
- delivers AGP 4x performance and memory bandwidth up to 1 GB/s.
- supports an extra AGP Slot that supports 4X and Fast Write transactions.
- provides powerful hardware decoding DVD accelerator to improve the DVD playback performance.
- Provides the standard interface for CRT monitors
- provides the Digital Flat Panel Port (DFP) for a standard interface between a personal computer and a digital flat panel monitor.
- adopts Share System Memory Architecture which can flexibly utilize the frame buffer size up to 64MB.

Key Features:

"Super-South Bridge" in SiS630S

- integrates all peripheral controllers/accelerators /interfaces.
- provides a total communication solution including 10/100Mb Fast Ethernet for Office requirement and 1Mb HomePNA for Home Networking.
- offers AC'97 compliant interface that comprises digital audio engine with 3D-hardware accelerator, on-chip sample rate converter, and professional wavetable along with separate modem DMA controller.
- provides interface to Low Pin Count (LPC) operating at 33 MHz clock which is the same as PCI clock on the host, and dual USB host controllers with six USB ports that deliver better connectivity and 2 x 12Mb bandwidth.
- The built-in fast PCI IDE controller supports the ATA PIO/DMA, and the Ultra DMA33/66 function that supports the data transfer rate up to 100 MB/s. It provides the separate data path for two IDE channels that can eminently improve the performance under the multi-tasking environment.

Host Interface Controller

- Supports Intel mobile Pentium II/!!! CPUs
- Synchronous Host/DRAM Clock Scheme
- Asynchronous Host/DRAM Clock Scheme

Integrated DRAM Controller

- 3-DIMM/6-Bank of 3.3V SDRAM
- Supports Memory Bus up to 133 MHz
- System Memory Size up to 3 GB
- Up to 512MB per Row
- Supports 16Mb, 64Mb, 128Mb, 256Mb, 512Mb SDRAM Technology
- Suspend-to-RAM (STR)
- Relocatable System Management Memory Region
- Programmable Buffer Strength for CS#, DQM[7:0], WE#, RAS#, CAS#, CKE, MA[14:0] and MD[63:0]
- Shadow RAM Size from 640KB to 1MB in 16KB increments
- Two Programmable PCI Hole Areas

Integrated A.G.P. Compliant Target/66Mhz Host-to-PCI Bridge

- AGP v2.0 Compliant
- Supports Graphic Window Size from 4MBytes to 256MBytes
- Supports Pipelined Process in CPU-to-Integrated 3D A.G.P. VGA Access
- Supports 8 Way, 16 Entries Page Table Cache for GART to Enhance Integrated A.G.P. VGA Controller
- Read/Write Performance
- Supports PCI-to-PCI Bridge Function for Memory Write from 33Mhz PCI Bus to Integrated A.G.P. VGA
- Supports Additional AGP slot with 4X and Fast Write Transaction

Meet PC99 Requirements

PCI 2.2 Specification Compliant

High Performance PCI Arbiter

- Supports up to 4 PCI Masters
- Rotating Priority Arbitration Scheme
- Advanced Arbitration Scheme Minimizing Arbitration Overhead.
- Guaranteed Minimum Access Time for CPU And PCI Masters

Integrated Host-To-PCI Bridge

- Zero Wait State Burst Cycles
- CPU-to-PCI Pipeline Access
- 256B to 4KB PCI Burst Length for PCI Masters
- PCI Master Initiated Graphical Texture Write Cycles Re-mapping
- Reassembles PCI Burst Data Size into Optimized Block Size

Fast PCI IDE Master/Slave Controller

- Supports PCI Bus Mastering
- Native Mode and Compatibility Mode
- PIO Mode 0, 1, 2 , 3, 4
- Multiword DMA Mode 0, 1, 2
- Ultra DMA 33/66/100
- Two Independent IDE Channels Each with 16 DW FIFO

Virtual PCI-to-PCI Bridge

Integrated Ultra AGP VGA for Hardware 2D/3D Video/Graphics Accelerators

- Supports Tightly Coupled 64 Bits Host Interface to VGA to Speed Up GUI Performance and Video Playback Frame Rate
- AGP v. 2.0 Compliant
- Zero-Wait-State 128x4 Post-Write Buffer with Write Combine Capability
- Zero-Wait-State 128x4 2-Way Read Ahead Cache Capability
- Re-locatable Memory-Mapped and I/O Address Decoding
- Flexible Design Shared Frame Buffer Architecture for Display Memory
- Shared System Memory Area up to 64MB
- Built-in 8K Bytes Texture Cache
- Supports High Quality Dithering
- Supports Bump Mapping
- Supports 8/16/24/32 BPP RGB/ARGB Texture Format
- Supports Video YUV Texture in All Supported Texture Formats
- 128-Bit 2D Engine with a Full Instruction Set
- Maximum 64 MB Frame Buffer with Linear Addressing
- Supports Hardware DVD Accelerator
- Supports Single Frame Buffer Architecture
- Supports Two Independent Video Windows with Overlay Function and Scaling Factors
- Supports YUV-To-RGB Color Space Conversion
- Supports Graphic and Video Overlay Function
- Supports CD/DVD to TV Playback Mode
- Simultaneous Graphic and TV Video Playback Overlay
- Supports RGB555, RGB565, YUV422 and YUV420 Video Playback Format
- Supports Filtered Horizontal Up and Down Scaling Playback
- Supports DVD Sub-Picture Playback Overlay
- Supports DVD Playback Auto-Flipping
- Built-in Two Video Playback Line Buffers
- Built-in Programmable 24-bit True-Color RAMDAC up to 270 MHz Pixel Clock RAMDAC Snoop Function
- Built-in Dual-Clock Generator
- Supports Multiple Adapters and Multiple Monitors
- Built-in PCI Multimedia Interface
- Supports Digital Flat Panel Port for Digital Monitor (LCD Panel)

- Built-in VESA Plug and Display for CH7003, PanelLink™ and LVDS Digital Interface
- Built-in Secondary CRT Controller for Independent Secondary CRT, LCD or TV digital output
- Supports VESA Standard Super High Resolution Graphic Modes

640x480	16/256/32K/64K/16M colors 120 Hz NI
800x600	16/256/32K/64K/16M colors 120 Hz NI
1024x768	256/32K/64K/16M colors 120 Hz NI
1280x1024	256/32K/64K/16M colors 85 Hz NI
1600x1200	256/32K/64K/16M colors 85 Hz NI
1920x1440	8bbp/16bbp 60NI

- Low Resolution Modes
- Supports Virtual Screen up to 4096x4096
- Fully Directx 7.0 Compliant
- Efficient and Flexible Power Management with ACPI Compliance

Low Pin Count Interface

- Forwards PCI I/O and Memory Cycles into LPC Bus
- Translates 8-/16-bit DMA Cycles into PCI Bus Cycles

Advanced PCI H/W Audio & Modem

Advanced Power Management

- Meets ACPI 1.0b Requirements
- Meets APM 1.2 Requirements
- ACPI Sleep States Include S1, S4, S5
- CPU Power States Include C0, C1, C2 C3
- Power Button with Override
- RTC Day-of-Month, Month-of-Year Alarm
- 24-bit Power Management Timer
- LED Blinking in S1 State
- System Power-Up Events Include: Power Button, Hot-Key, Keyboard Password/ Hot-
- Key, RTC Alarm, Modem Ring-In, LAN, PME#, AC'97 Wake-Up and USB
- Wake-Up
- Software Watchdog Timer
- Power Supply'98 Support
- PCI Bus Power Management Interface Spec. 1.0

Integrated DMA Controller

- Two 8237A Compatible DMA Controllers
- 8/16- bit DMA Data Transfer
- Distributed DMA Support

Integrated Interrupt Controller

- Two 8237A Compatible DMA Controllers
- Two 8259A Compatible Interrupt Controllers
- Level- or Edge-Triggered Programmable

- Serial IRQ
- Interrupt Sources Re-routable to Any IRQ Channel

Three 8254 Compatible Programmable 16-bit Counters

- System Timer Interrupt
- Generate Refresh Request
- Speaker Tone Output

Integrated Keyboard Controller

- Hardwired Logic Provides Instant Response
- Supports PS/2 Mouse Interface
- Password Security and Password Power-Up
- System Sleep and Power-Up by Hot-Key
- KBC and PS2 Mouse Can Be Individually Disabled

Integrated Real Time Clock (RTC) with 256B CMOS SRAM

- Supports ACPI Day-of-Month and Month-of-Year Alarm
- 256 Bytes of CMOS SRAM
- Provides RTC H/W Year 2000 Solution

Universal Serial Bus Host Controller

- OpenHCI Host Controller with Root Hub
- Two USB Host Controllers
- Six USB Ports
- Supports Legacy Devices
- Over Current Detection

I^{2}C Bus/SMBUS Series Interface

Integrated Fast Ethernet Controller and MAC Interface

- Plug and Play Compatible
- High-Performance 32-Bit PCI Bus Master Architecture with Integrated Direct Memory
- Supports Big Endian and Little Endian Byte Alignments
- Implements Optional PCI 3.3v Auxiliary Power Source 3.3Vaux Pin And Optional PCI
- Supports Software, Enhanced Software, and Automatic Polling Schemes to Internal
- PHY Status Monitor and Interrupt
- Supports 10base-T, 100base-Tx

NAND Tree for Ball Connectivity Testing

672-Balls BGA Package

1.8V Core with Mixed 3.3V and 5V I/O CMOS Technology

PC Card Chipset

The PCI1410 supports the following features:

- Ability to wake from D3 hot and D3 cold
- Fully compatible with the IntelE 430TX (Mobile Triton II) chipset
- A 144-Pin Low-Profile QFP (PGE), 144-ball MicroStar Ball Grid Array (GGU) package, or 209-ball MicroStar Ball Grid Array (GHK) package
- 3.3-V core logic with universal PCI interfaces compatible with 3.3-V and 5-V PCI signaling environments
- Mix-and-match 5-V/3.3-V 16-bit PC Cards and 3.3-V CardBus Cards
- Single PC Card or CardBus slot with hot insertion and removal
- Burst transfers to maximize data throughput on the PCI bus and the CardBus bus
- Parallel PCI interrupts, parallel ISA IRQ and parallel PCI interrupts, serial ISA IRQ with parallel PCI interrupts, and serial ISA IRQ and PCI interrupts
- Serial EEPROM interface for loading subsystem ID and subsystem vendor ID
- Pipelined architecture allows greater than 130M bps sustained throughput from CardBus-to-PCI and from PCI-to-CardBus
- Interface to parallel single-slot PC Card power interface switches like the TI TPS2211
- Up to five general-purpose I/Os
- Programmable output select for CLKRUN
- Five PCI memory windows and two I/O windows available to the 16-bit PC Card socket
- Two I/O windows and two memory windows available to the CardBus socket
- Exchangeable Card Architecture (ExCA) compatible registers are mapped in memory and I/O space
- Intel 82365SL-DF and 82365SL register compatible
- Distributed DMA (DDMA) and PC/PCI DMA
- 16-Bit DMA on the PC Card socket
- Ring indicate, SUSPEND, PCI CLKRUN, and CardBus CCLKRUN
- Socket activity LED pins
- PCI Bus Lock (LOCK)
- Advanced Submicron, Low-Power CMOS Technology
- Internal Ring Oscillator

CPU and Memory

CPU

The 5100S/5500S Notebook PC uses the Intel Mobile Pentium III/Celeron (.18) processor in a µPGA2 package.

The Intel Mobile Pentium III/Celeron (.18) processor features an integrated L2 cache(256KB for Pentium III and 128KB for Celeron (.18)) and a 64-bit high performance system bus. The Mobile Pentium III/Celeron (.18) processor's 64-bit wide Low Power Gunning Transceiver Logic system bus is compatible with the SIS630S AGPSet and provides a glue-less, point-to-point interface for an I/O bridge/memory controller.

The Intel Mobile Pentium III and Celerons (.18) processors are fully compatible with all software written for the Pentium processor with MMX technology, Pentium processor, Intel486 microprocessor, and Intel386 microprocessor. In addition, they provide improved multimedia & communications performance.

They feature:

Performance improved over existing mobile processors
- Supports the Intel Architecture with Dynamic Execution
- Supports the Intel Architecture MMX technology

Integrated primary (L1) instructions and data caches
- 4-way set associative, 32-byte line size, 1 line per sector
- 16-Kbyte instruction cache and 16-Kbyte writeback data cache
- Cacheable range programmable by processor programmable registers

Integrated second level (L2) cache
- 4-way set associative, 32-byte line size, 1 line per sector
- Operated at full core speed
- 128/256-Kbyte, ECC protected cache data array

Low Power GTL+ system bus interface
- 64-bit data bus, 100-MHz operation
- Uniprocessor, two loads only (processor and I/O bridge/memory controller)
- Short trace length and low capacitance allows for single ended termination

Voltage reduction technology

Pentium III processor clock control
- Quick Start for low power, low exit latency clock 'throttling'
- Deep Sleep mode for extremely low power dissipation

Thermal diode for measuring processor temperature

Adding or replacing the processor.

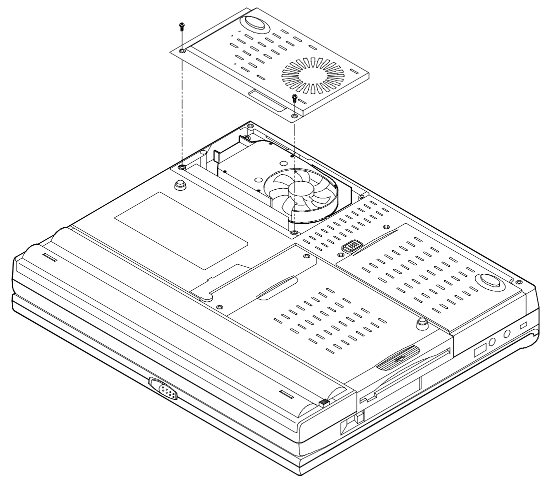
Note: *If you plan on removing the heat sink, which is necessary to add or replace the processor, you will need to have a replacement heat sink pad available. Before proceeding, please contact your dealer to get a replacement pad which you will need when you reinstall the heat sink.*

In order to add or replace the processor you must:

A: Remove the heat sink
B: Remove the processor
C: Insert a new processor
D: Reinstall the heat sink
E: Changing the SW DIP Switch settings

A: Remove the heat sink

1) Turn off the computer
2) Turn over the computer
3) Remove the Heat Sink and CPU Cover



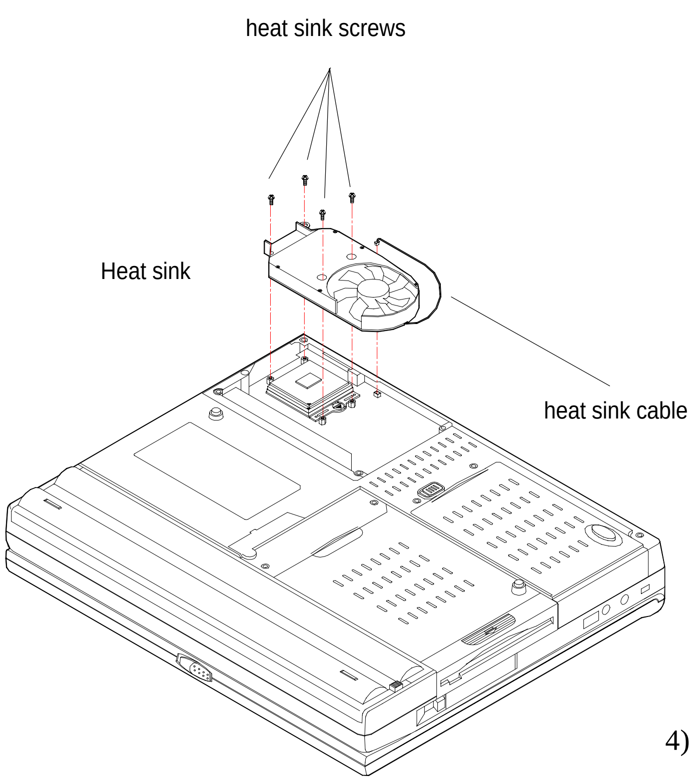


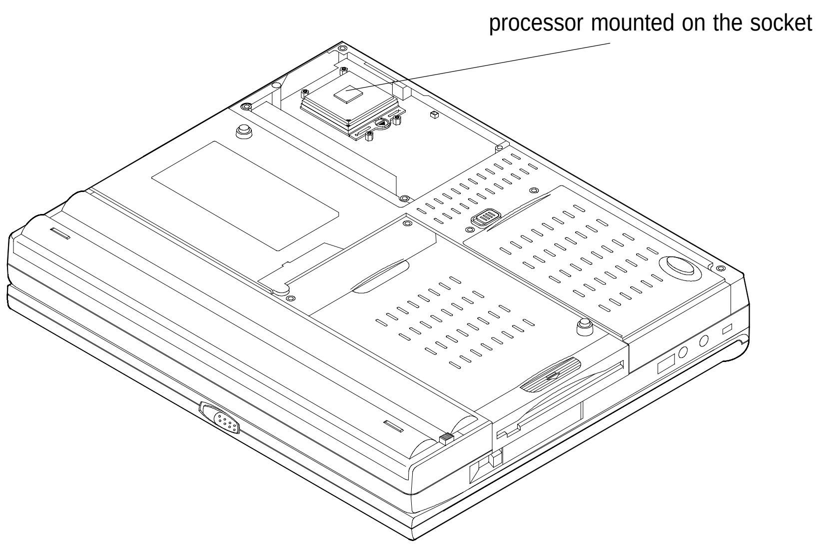
Figure 4-3

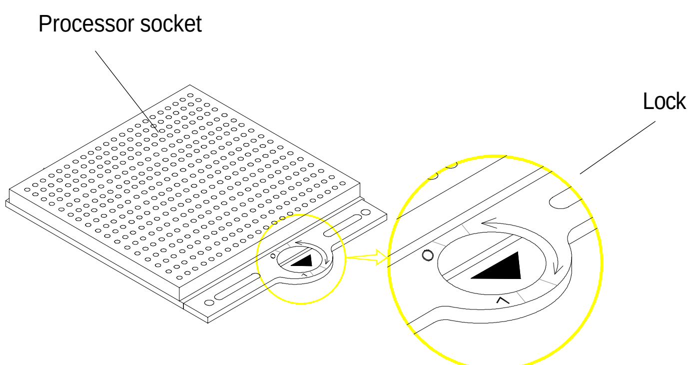
4) Remove the 4 screws which hold the heat sink in place.
5) Gently remove the heat sink cable.
6) Lift the heat sink out of the computer

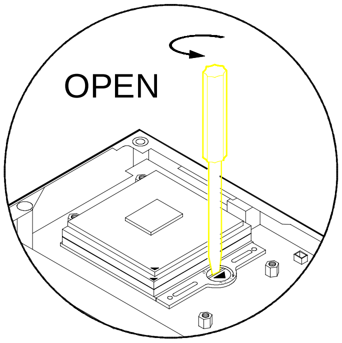
B: Remove the processor

The processor is secured on the mainboard with a lock which is easily opened using a small regular screwdriver.

With the heat sink already removed you will need to set the lock to the open position before removing the processor:

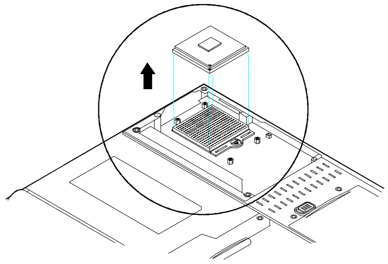






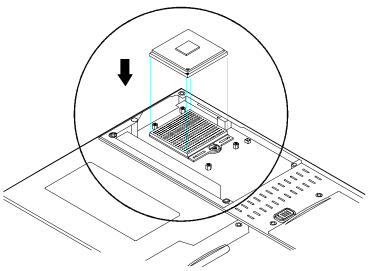
1) Turn the screw on the processor lock to the open position. (O)

2) Lift the processor from the socket.

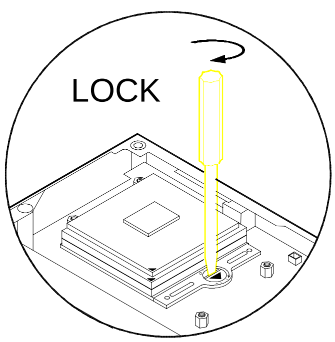


C: Insert a new processor

1) With the processor lock in the open position, align the pins of the processor with the holes in the socket.



2) Press the processor into the socket.

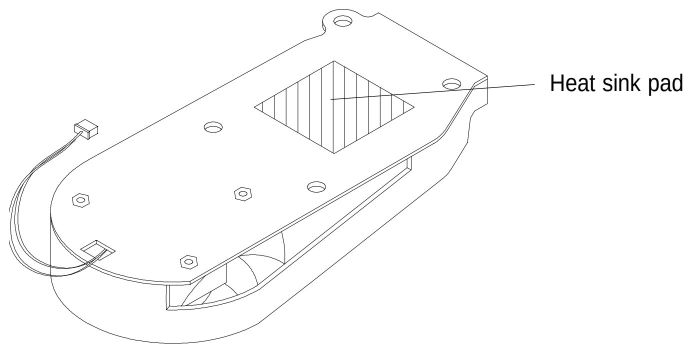


3) Turn the screw to the locked position (L)

D: Reinstall the heat sink

Note: *When reinstalling the heat sink, you will also have to replace the heat sink pad. A heat sink pad can be obtained from your dealer.*

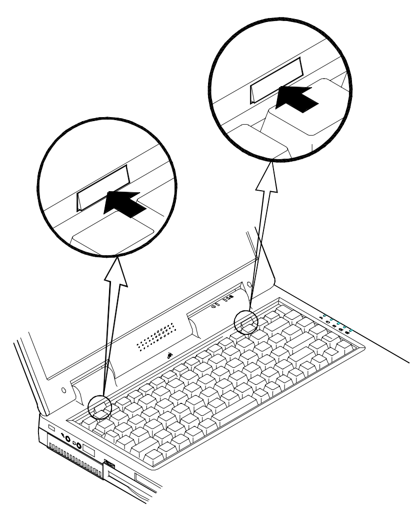
1) Peel off the old heat sink pad and stick on a new one.
2) Insert the heat sink cable in the slot. **(Figure 4-3)**
3) Align the 4 screw holes on the heat sink with those on the mainboard and screw them in about half way. Once all the screws are in about half way and the heat sink is seated probably tighten the screws.



E: Changing the SW1 DIP Switch settings

If you have installed the processor with Intel Speedstep you will have to change the SW1 DIP Switch settings. Follow these steps to get to change the SW1 DIP Switch setings:

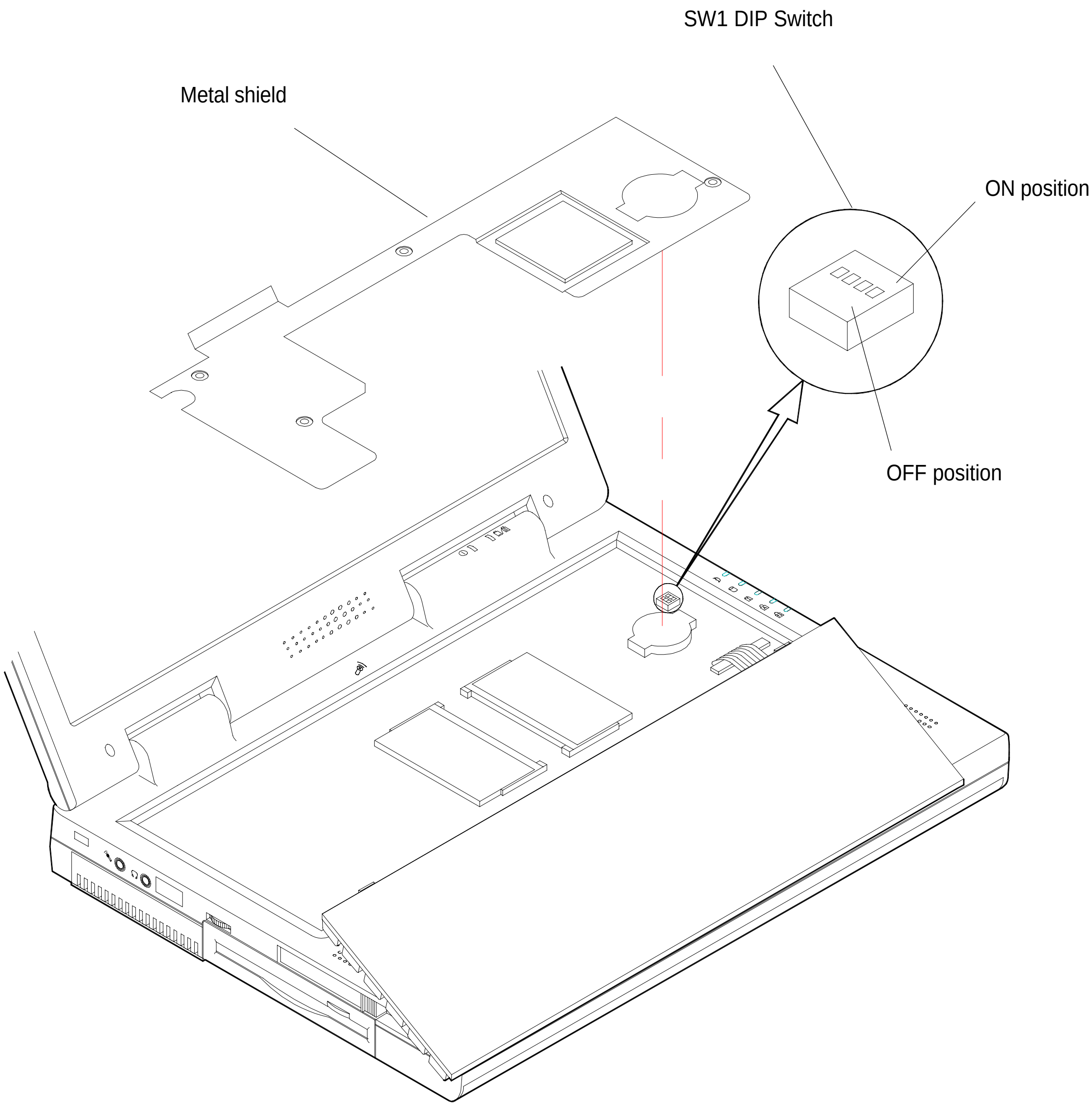
1) Turn off the computer.
2) Press the two keyboard latches to elevate the keyboard from its normal position.
3) Carefully lift the keyboard assembly out to expose the mainboard.



4) Remove the metal protective shield
5) Locate the SW DIP Switch on the right side.
6) Change the settings to the following:

SW settings for Intel Speedstep processor			
SW1-1	**SW1-2**	**SW1-3**	**SW1-4**
ON	ON	ON	OFF

7) Put the metal shield back into place
8) Put the keyboard back into place.



Memory

The computer has two memory sockets for PC-100/PC-133 compliant, 144 pin SODIMM (Small Outline Dual In-line Memory Module) modules. The memory can be expanded to 512 MB with the following combinations:

Bank 0 (64-bit)	Bank 1 (64-bit)	Power	Total Size
32 MB	Empty	3.3V	32 MB
32 MB	32 MB		64 MB
64 MB	Empty		64 MB
64 MB	32 MB		96 MB
64 MB	64 MB		128 MB
128 MB	Empty		128 MB
128 MB	32 MB		160 MB
128 MB	64 MB		192 MB
128 MB	128 MB		256 MB
256 MB	Empty		256 MB
256 MB	32 MB		288 MB
256 MB	64 MB		320 MB
256 MB	128 MB		384 MB
256 MB	256 MB		512 MB

Once a new module is installed the memory size is automatically detected by the POST routines when you turn on your computer.

Expansion Memory Socket

The Model 5100S/5500S Notebook PC has two 144-pin SODIMM type memory sockets with the following configuration:

Pin	SDRAM	Pin	SDRAM		Pin	SDRAM	Pin	SDRAM
1	Vss	2	Vss		73	Reserved	74	CLK1
3	DQ0	4	DQ32		75	Vss	76	Vss
5	DQ1	6	DQ33		77	Reserved	78	Reserved
7	DQ2	8	DQ34		79	Reserved	80	Reserved
9	DQ3	10	DQ35		81	Vdd	82	Vdd
11	Vdd	12	Vdd		83	DQ16	84	DQ48
13	DQ4	14	DQ36		85	DQ17	86	DQ49
15	DQ5	16	DQ37		87	DQ18	88	DQ50
17	DQ6	18	DQ38		89	DQ19	90	DQ51
19	DQ7	20	DQ39		91	Vss	92	Vss
21	Vss	22	Vss		93	DQ20	94	DQ52
23	DQMB0	24	DQMB4		95	DQ21	96	DQ53
25	DQMB1	26	DQMB5		97	DQ22	98	DQ54
27	Vdd	28	Vdd		99	DQ23	100	DQ55
29	A0	30	A3		101	Vdd	102	Vdd
31	A1	32	A4		103	A6	104	A7
33	A2	34	A5		105	A8	106	BA0
35	Vss	36	Vss		107	Vss	108	Vss
37	DQ8	38	DQ40		109	A9	110	BA1
39	DQ9	40	DQ41		111	A10	112	A11
41	DQ10	42	DQ42		113	Vdd	114	Vdd
43	DQ11	44	DQ43		115	DQMB2	116	CAS6#
45	Vdd	46	Vdd		117	DQMB3	118	DQMB7
47	DQ12	48	DQ44		119	Vss	120	Vss
49	DQ13	50	DQ45		121	DQ24	122	DQ56
51	DQ14	52	DQ46		123	DQ25	124	DQ57
53	DQ15	54	DQ47		125	DQ26	126	DQ58
55	Vss	56	Vss		127	DQ27	128	DQ59
57	Reserved	58	Reserved		129	Vdd	130	Vdd
59	Reserved	60	Reserved		131	DQ28	132	DQ60
61	CLK0	62	CKE0		133	DQ29	134	DQ61
63	Vdd	64	Vdd		135	DQ30	136	DQ62
65	RAS#	66	CAS#		137	DQ31	138	DQ63
67	WE#	68	CKE1#		139	Vss	140	Vss
69	S0#	70	A12		141	SDA	142	SCL
71	S1#	72	A13		143	Vdd	144	Vdd

Installing a Memory Module

1) Turn off the computer.
2) Press the two keyboard latches at the top of the keyboard to elevate the keyboard from its normal position.
3) Carefully lift the keyboard assembly out to expose the mainboard.

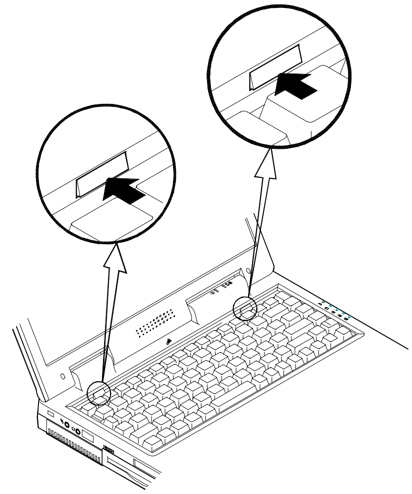


Figure 4-1

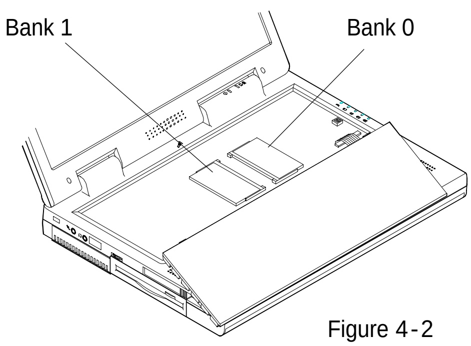
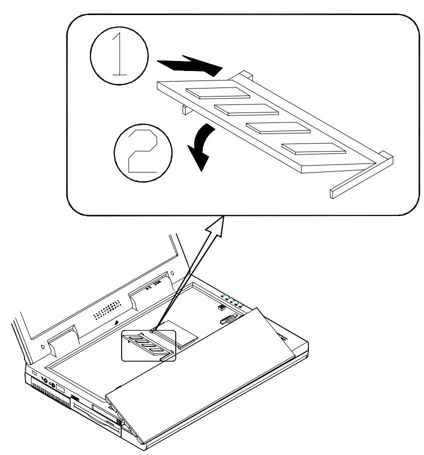


Figure 4-2

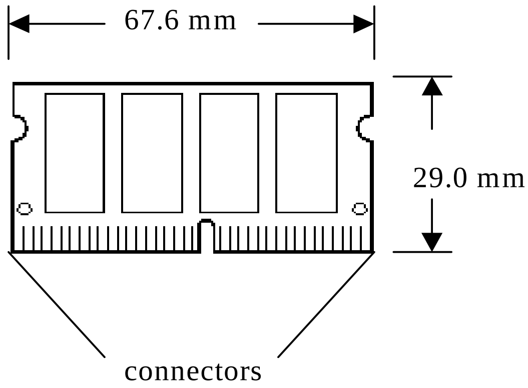
4) Locate the memory banks, Bank 0 is on the right and Bank 1 is on the left.

Note: *Only use Bank 0 if you have one memory module. If you are using two memory modules always use the larger module in Bank 0.*

5) Insert the memory module at an angle (about 45°) and fit its connectors firmly into the bank ①.
6) Press down the edge of the memory module and lock it into place ②.
7) Put the keyboard back into place.



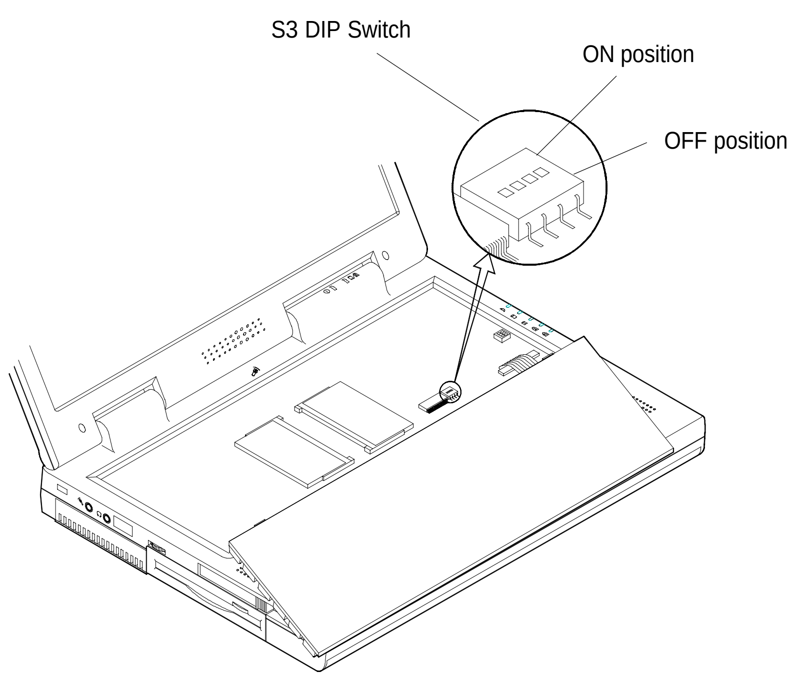
Note: *Make sure the connectors go into the bank. You must use a RAM module that complies with Intel unbuffered SODIMM (67.6 mm x 29.0 mm). Please consult your dealer for the details.*



Changing the S3 DIP Switch settings

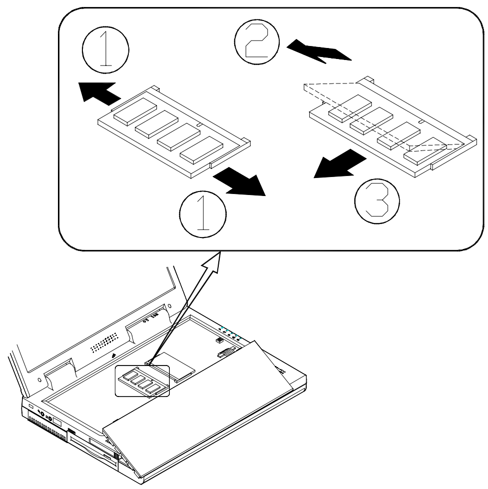
Once you have installed the new memory you will have to change the DIP Switch settings depending on the type of memory you have installed. Please refer to the chart below for the correct settings for the S3 DIP Switches

SDRAM TYPE	S3-1	S3-2	S3-3	S3-4
PC100	ON	OFF	OFF	OFF
PC133	ON	OFF	ON	OFF



Removing a Memory Module

1) Turn off the computer.
2) Press the two keyboard latches to elevate the keyboard from its normal position (refer to **Figure 4-1**)
3) Carefully lift the keyboard assembly out to expose the mainboard.
4) Locate the memory sockets. Bank 0 is on the left and Bank 1 is on the right. (refer to **Figure 4-2**)
5) Gently pull the two latches outward on both ends of the module ①.
6) The module will pop up ②.
7) Remove the memory module ③.
8) Install a new memory module if desired (refer to Installing a Memory Module).
9) Put the keyboard back into place.



Drive information and Pin assignments

Storage Devices

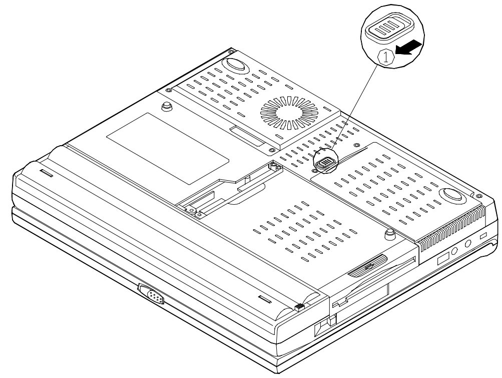
HDD (BUILT-IN)

- 2.5", 12.7mm max. height and removable HDD
- Average access time: below 13ms
- PCI local bus IDE interface
- Supports: 12GB or higher HDD (Ultra DMA 33/66/100)
- MTBF 300,000 hours
- ULTRA DMA/SMART

HDD PIN ASSIGNMENT

Pin	Description	Pin	Description
A-D	DRIVE ID SELECT	E, F	KEY
1	RESET-	2	GROUND
3	+DD7	4	+DD8
5	+DD6	6	+DD9
7	+DD5	8	+DD10
9	+DD4	10	+DD11
11	+DD3	12	+DD12
13	+DD2	14	+DD13
15	+DD1	16	+DD14
17	+DD0	18	+DD15
19	GROUND	20	KEY
21	DMARQ	22	GROUND
23	DIOW-	24	GROUND
25	DIOR-	26	GROUND
27	IORDY	28	CSEL
29	DMACK-	30	GROUND
31	INTRQ	32	IOCS16-
33	DA1	34	PDIAG-
35	DA0	36	DA2
37	CS0-	38	CS1-
39	DASP-	40	GROUND
41	+5 VOLTS SUPPLY	42	+5 VOLTS SUPPLY
43	GROUND	44	RESERVED

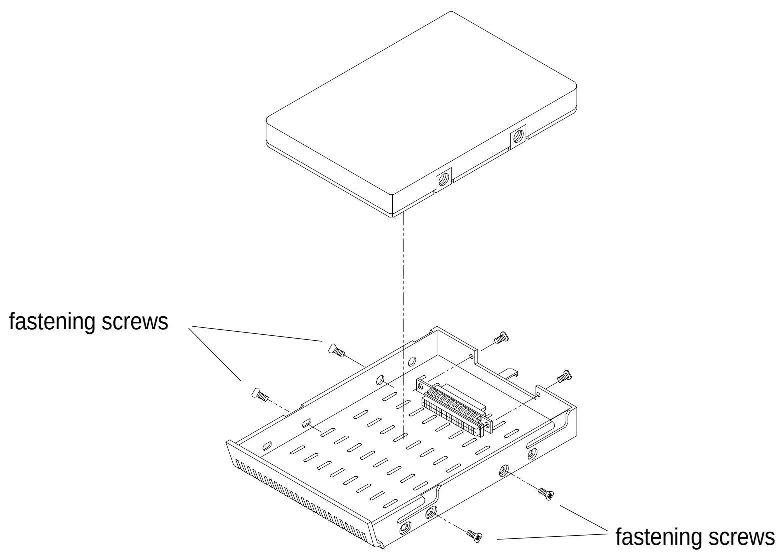
Removing the HDD from the notebook



1) Turn the computer off.
2) Turn the computer over.
3) Locate the HDD latch ①.
4) Slide and hold the latch forward then slide the HDD out of the computer.
5) Lift the hard disk drive out of the computer.

Removing the HDD from its tray

1) Remove the HDD case from the computer (refer to **Removing the HDD** in Chapter 2 for details).
2) Remove the two sets of screws on the side of the case.
3) Slowly remove the HDD from the case until you see the connecting cable.
4) Gently disconnect the cable from the HDD being careful not to bend any pins or crimp the cable.
5) Connect a new HDD to the cable being careful not to bend any pins or crimp the cable.
6) Slowly place the HDD back into the case.
7) Hold the HDD firmly in place with two screws on each side.
8) Insert the HDD into the computer (refer to **Inserting the HDD** in Chapter 2 for details)



Inserting the HDD

1) Turn off the computer.
2) Turn the computer over.
3) Place the HDD case into the computer.
4) Slide the HDD in until you hear a click.

FDD

- 3.5", 1.44MB floppy disk drive
- 3-Mode support for Japanese market

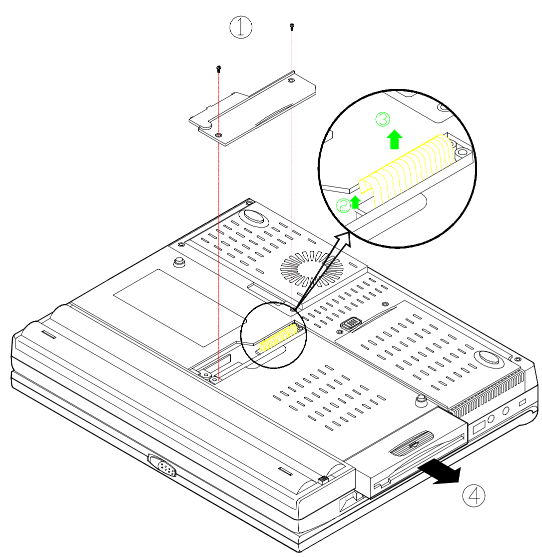
FDD PIN ASSIGNMENT

Pin	Description	Pin	Description
1	+5 V	2	INDEX
3	+5 V	4	DRIVE SELECT0
5	+5 V	6	DISK CHANGE
7	N.C.	8	Ready
9	HD(High : HD)	10	MOTOR ON
11	N.C.	12	DIRECTION
13	Mode Select	14	STEP
15	GND	16	WRITE DATA
17	GND	18	WRITE GATE
19	GND	20	TRACK 00
21	GND	22	WRITE PROTECT
23	GND	24	READ DATA
25	GND	26	Side One Select

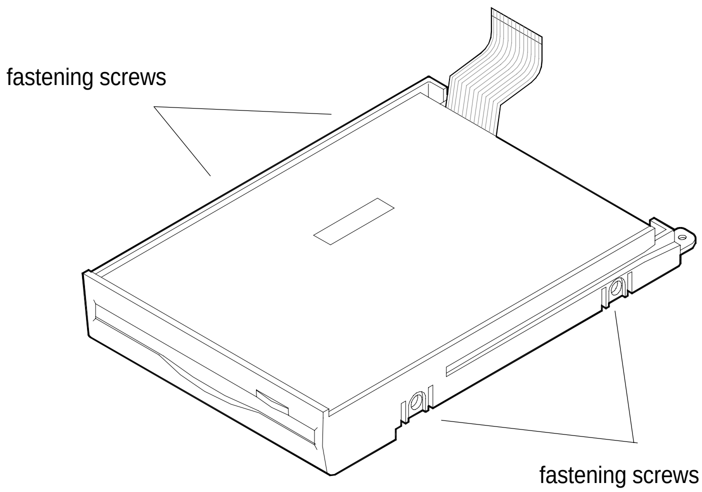
Removing the FDD

Removing the Floppy Disk Drive

1) Turn off the computer.
2) Turn the computer over.
3) Locate the DVD / FDD cover ①.
4) Unscrew and remove the cover .
5) Lift the white plastic piece which holds the FDD cable in place ②.
6) Pull out the FDD cable ③.
7) Grasp the FDD tab and gently PULL the FDD out of the computer ④.



8) Remove the two screws on each side of the FDD tray.
9) Remove the FDD from its tray. (see picture)



The FDD floppy disk drive out of its bay

Inserting the Floppy Disk Drive

Follow the instructions for removing the FDD in reverse order.

DVD-ROM

- Model Matsushita SR8173
- Dimensions 128mm(W)x12.7mm(H)x127mm(D)
- Random access time 130ms-CD / 170ms-DVD
- Data transfer rate 4X speed (5400KB/s)-DVD
- Mechanism tray-loading
- Interface ATAPI
- MTBF 60,000POH

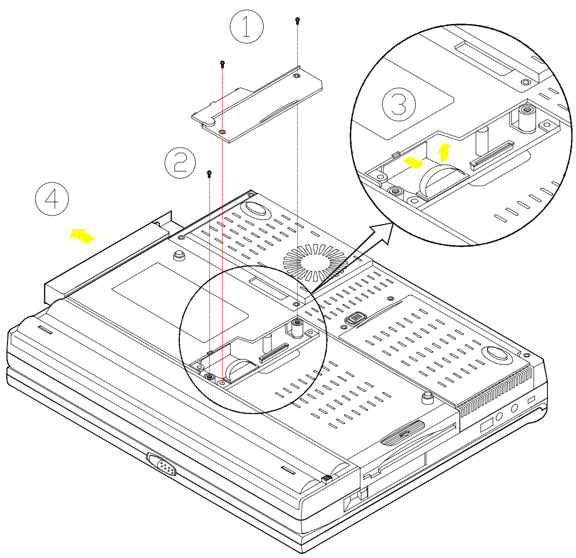
DVD-ROM PIN ASSIGNMENT

Signal Name	I/O	Connector Contact		I/O	Signal Name
AUDIO L-CH	O	1	2	O	AUDIO R-CH
AUDIO GROUND		3	4		N.C.
/RESET	I	5	6	I/O	DD8
DD7	I/O	7	8	I/O	DD9
DD6	I/O	9	10	I/O	DD10
DD5	I/O	11	12	I/O	DD11
DD4	I/O	13	14	I/O	DD12
DD3	I/O	15	16	I/O	DD13
DD2	I/O	17	18	I/O	DD14
DD1	I/O	19	20	I/O	DD15
DD0	I/O	21	22	O	DMARQ
GROUND		23	24	I	/DIOR
/DIOW	I	25	26		GROUND
IORDY	O	27	28	I	/DMACK
INTRQ	O	29	30	O	/IOCS16
DA1	I	31	32	I/O	/PDIAG
DA0	I	33	34	I	DA2
/CS1FX	I	35	36	I	/CS3FX
/DASP	I/O	37	38	I	+5 V
+5 V	I	39	40	I	+5 V
+5 V	I	41	42	I	+5 V
GROUND		43	44		GROUND
GROUND		45	46		GROUND
CSEL	I	47	48		GROUND
RESERVED		49	50		RESERVED

Removing the DVD-ROM Module

Removing the DVD-ROM Module

1) Turn off the computer.
2) Turn the computer over.
3) Locate the DVD/FDD cover ①.
4) Unscrew and remove the cover.
5) Remove the single screw which holds the DVD-ROM in the computer ②.
6) Locate the cable tab and gently pull the cable tab upward to disconnect the DVD-ROM from the computer mainboard ③.
7) Grasp the DVD-ROM tab and gently PULL the DVD-ROM out of the computer ④.



Inserting the DVD-ROM module

Refer to removing the DVD-ROM and follow the instructions in reverse order.

CD-ROM (OPTIONAL)

- Model — Matsushita CR175
- Dimensions — 128mm(W)x12.7mm(H)x127mm(D)
- Random access time — 120ms
- Data transfer rate — 24X speed (3600KB/s)
- Mechanism — tray-loading
- Interface — ATAPI
- MTBF — 60,000POH

CD-ROM PIN ASSIGNMENT

Signal Name	I/O	Connector Contact		I/O	Signal Name
AUDIO L-CH	O	1	2	O	AUDIO R-CH
AUDIO GROUND		3	4		GROUND
/RESET	I	5	6	I/O	DD8
DD7	I/O	7	8	I/O	DD9
DD6	I/O	9	10	I/O	DD10
DD5	I/O	11	12	I/O	DD11
DD4	I/O	13	14	I/O	DD12
DD3	I/O	15	16	I/O	DD13
DD2	I/O	17	18	I/O	DD14
DD1	I/O	19	20	I/O	DD15
DD0	I/O	21	22	O	DMARQ
GROUND		23	24	I	/DIOR
/DIOW	I	25	26		GROUND
IORDY	O	27	28	I	/DMACK
INTRQ	O	29	30	O	/IOCS16
DA1	I	31	32	I/O	/PDIAG
DA0	I	33	34	I	DA2
/CS1FX	I	35	36	I	/CS3FX
/DASP	I/O	37	38	I	+5 V
+5 V	I	39	40	I	+5 V
+5 V	I	41	42	I	+5 V
GROUND		43	44		GROUND
GROUND		45	46		GROUND
CONFIG(*1)	I	47	48		GROUND
RESERVED		49	50		RESERVED

Interface Pin Assignments

RS-232 Serial Interface

The RS-232C Serial Interface uses a 9 pin D-sub male connector with the following configuration:

Pin	Description
1	DCD (DATA Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmitted Data)
4	DTR (Data Terminal Ready)
5	GND (Signal Ground)
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

Parallel Interface

The Parallel interface uses a 25-pin D-sub female connector with the following configuration:

Pin	Description	Pin	Description
1	Strobe#	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	ACK#
11	Busy	12	Paper Empty
13	Select	14	Auto Feed#
15	Error#	16	Initialize#
17	Select In	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground		

USB Interface

The external USB (Universal Serial Bus) has the following configuration:

Pin	Description
1	USB_VCCA
2	USBP0-
3	USBP0+
4	GND

Internal trackpad Interface

The internal trackpad interface connector has the following configuration:

Pin	Description
1	EKDA
2	EMDA
3	GND
4	VCC
5	EKCLK
6	EMCLK
7	GND
8	GND
9	GND

External Monitor Interface

The external monitor interface uses a 15-pin D-sub female connector with the following configuration:

Pin	Description	Pin	Description	Pin	Description
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDA
3	BLUE	8	GND	13	HSYNC
4	NC	9	NC	14	VSYNC
5	GND	10	GND	15	DDCLK

RGB Out:

- Output Impedance : 75 Ohms
- RGB peak voltage: 0.7Vpp

External Keyboard/PS2 Mouse Interface

The external keyboard/PS2 mouse interface connector has the following configuration:

Pin	Description
1	EKDA
2	EMDK
3	GND
4	VCC
5	EKCLK
6	EMCLK
7	GND
8	GND
9	GND

PCMCIA CardBus Interface

Pin	Description		Pin	Description	
	CardBus	16Bit Card		CardBus	16Bit Card
A1	GND	GND	A40	A_VPP2	A_VPP2
A2	GND	GND	A41	A_CCLK	A_A16
A3	A_CAD0	A_D3	A42	GND	GND
A4	A_CCD1#	A_CD1#	A43	A_CTRDY#	A_A22
A5	A_CAD14	A_D4	A44	A_CIRDY#	A_A15
A6	A_CAD2	A_D11	A45	A_CFRAME#	A_A23
A7	A_CAD3	A_D5	A46	A_CC/BE2#	A_A12
A8	A_CAD4	A_D12	A47	A_CAD17	A_A24
A9	GND	GND	A48	A_CAD18	A_A7
A10	A_CAD5	A_D6	A49	GND	GND
A11	A_CAD6	A_D13	A50	A_CAD19	A_A25
A12	A_CAD7	A_D7	A51	A_CAD20	A_A6
A13	RFU	A_D14	A52	A_CVS2	A_VS2#
A14	A_CC/BE0#	A_CE1#	A53	A_CAD21	A_A5
A15	A_CAD9	A_D15	A54	A_CRST	A_RESET
A16	A_CAD10	GND	A55	A_CAD22	A_A4
A17	A_CAD9	A_A10	A56	A_CSERR#	A_WAIT#
A18	A_CAD10	A_CE2#	A57	GND	GND
A19	A_CAD11	A_OE#	A58	A_CAD23	A_A3
A20	A_CVS1	A_VS1#	A59	A_CREQ#	A_INPACK
A21	A_CAD12	A_A11	A60	A_CAD24	A_A2
A22	GND	GND	A61	A_CC/BE3#	A_REG#
A23	A_CAD13	A_IORD#	A62	A_CAD25	A_A1
A24	A_CAD14	A_A9	A63	A_CAUDIO#	A_BVD2
A25	A_CAD15	A_IOWR#	A64	A_CAD26	A_A0
A26	A_CC/BE1#	A_A8	A65	GND	GND
A27	A_CAD16	A_CAD16	A66	A_CSTSCHG	A_BVD1
A28	GND	GND	A67	A_CAD27	A_D0
A29	A_CPAR	A_A13	A68	A_CAD28	A_D8
A30	RFU	A_A18	A69	A_CAD29	A_D1
A31	A_CPERR#	A_A14	A70	A_CAD30	A_D9
A32	A_CBLOCK#	A_A19	A71	RFU	A_D2
A33	A_CGNT#	A_WE#	A72	A_CAD31	A_D10
A35	A_CINT#	A_CINT#	A73	GND	GND
A36	A_CDEVSEK#	A_CDEVSEL#	A74	A_CCLKRUN#	A_WP
A37	A_VCC	A_VCC	A75	A_CCD2#	A_CD2#
A38	A_VCC	A_VCC	A76	GND	GND
A39	A_VPP1	A_VPP1	A77	GND	GND

Internal PCI Interface

(For optional modem or LAN card)

Pin	Description	Pin	Description
1	GND	2	GND
3	GND	4	GND
5	GND	6	GND
7	AUXBR	8	MIC_MODM
9	AD8	10	AD6
11	AD9	12	AD5
13	AD10	14	AD7
15	AD11	16	CBE#0
17	AD12	18	AD0
19	AD13	20	AD1
21	AD14	22	AD2
23	AD15	24	AD3
25	CBE#1	26	AD4
27	PAR	28	MODEMRI
29	VCC	30	VCC
31	SERR#	32	IDSEL
33	PERR#	34	CBE#3
35	STOP#	36	PME#
37	DEVSEL#	38	INTA#
39	TRDY#	40	RESET#
41	IRDY#	42	PCLKMODM
43	FRAME#	44	GNT#4
45	CBE#2	46	REQ#4
47	GND	48	GND
49	VCC3	50	VCC3
51	VCC3	52	VCC3
53	VCC3	54	VCC3
55	GND	56	GND
57	GND	58	GND
59	VCC	60	VCC
61	VCC	62	VCC
63	VCC	64	VCC
65	AD16	66	AD31
67	AD17	68	AD30
69	AD18	70	AD29
71	AD19	72	AD28
73	AD20	74	AD27
75	AD21	76	AD26
77	AD22	78	AD25
79	AD23	80	AD24

LCD Interface

(For XGA TFT)

Pin	Description	Pin	Description
1	INVVCC	2	INVVCC
3	ENABL	4	BRIGADJ
5	GND	6	LP
7	FLM	8	DISPOFF#
9	GND	10	CL2
11	CONTADJ	12	LDE
13	PANELID0	14	PANELID1
15	GND	16	LCDVDD
17	LCDVDD	18	GND
19	TXOUTV0-	20	TXOUTV0+
21	GND	22	TXOUTV1-
23	TXOUTV1+	24	GND
25	TXOUTV2-	26	TXOUTV2+
27	GND	28	TXCLKV-
29	TXCLKV+	30	GND

Power

Application:

This specification shall apply to the power module to be operated in the Notebook 5100S/ 5500S system. The power board provides the following voltages for Intel P!!! CPUs:

1.35V &1.6V for CPU VCC_CORE

Input Power:

a. Adapter: +20.0V Constant Voltage Mode (65W).
b. Battery: LI-ION Smart Battery (47.36W).
c. Input Rating

ITEM	MIN	TYP	MAX	UNIT	REMARK
Input Voltage	12	20	21	V	--

Output Power:

DC OUTPUT				
VOLTAGE	REGULATION	RIPPLE & NOISE	CURRENT	
			Max	Surge
Vcc / 5V	±5%	150mV	4.0A	6.0A
Vcc3 / 3.3V	±5%	150mV	4.0A	6.0A
12V / 12V	±5%	200mV	0.22A	0.35A
Vcc_Core / 1.6V	±5%	150mV	15A	17A
VccT / 1.5V	±5%	150mV	1.5A	2.0A
Vcc1.8 / 1.8V	±5%	100mV	2.0A	3.0A
Vdd1.8 / 1.8V	±5%	100mV	70mA	80mA
VC / 5V	±5%	100mV	70mA	80mA

Note:

The surge currents of all outputs can keep 10 seconds maximum .
The output ripple/noise requirements should be met throughout the load range and under the input voltage from 12Vdc to 20Vdc. Measurements should be made with an oscilloscope with the 20Mhz bandwidth output bypassed with a connector with a 0.1uF ceramic capacitor and a 10 uF electrolytic capacitor to simulate loading.
The system is full run under auto test.

Output Protection Requirements:

a. Over current protection:

Vcc OCP —7A max

Vcc3 OCP — 7A max

Vcc_Core OCP — 20A max

VccT OCP — 3.5A max

Vcc1.8 OCP — 3.5A max

b. Output Short Protection : Vcc,Vcc3,12V,Vcc_Core,VccT,Vcc1.8

The power supply shall not be damaged by short form the output to return .

Battery Protection:

The discharge circuits should be SHUTDOWN when the voltage for the Li-ion battery voltage is down to 12V(+/-0.2V)

Vcc_Core VID setting :

No	VID4	VID3	VID2	VID1	VID0	COREVCC
1	0	0	0	0	0	2.0V
2	0	0	0	0	1	1.95V
3	0	0	0	1	0	1.90V
4	0	0	0	1	1	1.85V
5	0	0	1	0	0	1.80V
6	0	0	1	0	1	1.75V
7	0	0	1	1	0	1.70V
8	0	0	1	1	1	1.65V
9	0	1	0	0	0	1.60V
10	0	1	0	0	1	1.55V
11	0	1	0	1	0	1.50V
12	0	1	0	1	1	1.45V
13	0	1	1	0	0	1.40V
14	0	1	1	0	1	1.35V
15	0	1	1	1	0	1.30V
16	0	1	1	1	1	1.25V

Interface Specifications

JP1. Battery Connector (Off The Mother Board)

PIN	SIGNAL
1~8	B+
9	BAT-DATA
10	TEMP
11	BAT-CLK
12	CELL
13~20	GND

CNA1. DC/DC Connector (Off The Power Board)

PIN	SIGNAL
1~6	B+
7	VR_ON
8~13	GND
14 ~ 21	VCC3
22~27	GND
28~33	VCC
34~39	GND
40~42	12V

CN4. Battery Connector(Off The Mother Board)

PIN	SIGNAL
1,2	GND
3	CELL
4	TEMP
5	BAT_CLK
6	BAT_DATA
7,8	BAT+

Charge board

Battery parameters

The BIOS will download all battery parameters to the smart charger before POST. The battery parameters are as follows:

LI-ION CHG V (0x39) : Li-ion CV = (0x39) /3 *4
LI-ION DESINH V (0x3A) : ERROR = (0X3A) * 1.27 +2.3V
LI-ION EDVI (0x3B) : EDVI = (0x3B) /3 *4
LI-ION EDVF (0x3C) : EDVI = (0x3C) /3 *4

Default EDVI and EDVF and Constant Voltage:

Battery	Item	Voltage
LI-ION	Constant Voltage	16.8V ± 0.2V
LI-ION	EDVI	11.4V ± 0.2V
	EDVF	10.8V ± 0.2V

Charge current and Charge Time:

ITEM	MIN	TYPE	MAX	UNIT	REMARK
Input Voltage	19	20	21	V	From AC Adapter
Charge Current	0.6	0.8	1.0	A	When System is on
	1.3	1.5	1.7	A	When System is off
LI-Ion Charge Time	-	-	450	min	When System is on
	-	-	230	min	When System is off

Total Power Current (IRQ) :

Total Power Current
3A ±0.2A

**Total Power = System Power + Charge Power*

Hardware ShutDown:

Battery Type	**Max Voltage**
LI-ION	12V ± 0.2V

Max Voltage Protection :

Battery Type	**Max Voltage**
LI-ION	17.1V ± 0.2V

O.P.T (Protect for environment temperature) :

*For a **LI-ION battery charger start, if the temperature exceeds** 50°C or falls below 5°C, the charger shall not charge and the charge indicator will show no charger current.*
If the environment temperature is below 50°C the charger shall auto re-Charge. The thermistor of the battery pack will detect the environment temperature.

O.P.T
5 ~ 50°C

The trickle charge:

If the LI-ION battery voltage is below **3V/cell**,the charge controller will enter the trickle charge mode. The trickle charge current is about **200~300 mA (trickle charge time is 60 minutes max)**.

Charger full :

When the battery is fully charged, the charge controller will send a full signal and the gas guage indicator will display capacity greater than 90%.
For the smart battery, the charge controller full signal and the gas gauge are different.
It's normal for the gas gauge indicator to show a 90% charge even if the battery has just been fully charged and is actually above a 90% capacity.

Battery empty shutdown :

When the battery is empty, the charge controller will send a shut down signal within 3 seconds. The shut down signal is 3.3V.

Alert :

The charge controller will send an alert signal, when the adapter is plugged in or out, when the battery is inserted or removed, or when the battery is low.

During the alert signal, the charge controller will send the low signal pulse three times within a 10 second period.

Battery low alarm :

When the battery is low, the charge controller will send out the battery low alert. If KBC or the OS doesn't respond, the battery will go to the low signal in 2 seconds.

The battery low alarm is decided by the "alarm time", the battery voltage is for reference only. Therefore the battery low alarm defines the alarm time not the voltage.

Alarm time :

- Alarm time is defined from the time the battery low beep starts until the computer shuts down.
- The alarm time of a dumb battery must be less than 15 minutes and greater than 3 minutes for ZD Mark3.0.
- The alarm time of a smart battery is defined by either the remaining capacitor alarm or the remaining time alarm.

The battery is not normal if the green LED blinks while the battery is charging.

You must shutdown the computer, unplug the adapter and remove the battery. After the battery cools down, reinstall the battery and plug in the adapter to recharge the battery.

Smart battery :

The charge current of the smart battery depends on BQ2040 data.

The full charge of a smart battery depends on the remaining capacitor alarm or remaining time alarm .

The smart charger always reads the temperature of the smart battery to detect Max. T and OPT.

BIOS issue

After re-flashing the Bios, don't use the Ctrl+Alt+Del key to restart your computer. Instead you should press the power button to shutdown the computer and then turn on the computer, this will reload the default BIOS.

While using Ctrl+Alt+Del keys (warm start), KBC doesn't send out battery setup parameters to charge controller IC.

Inverter board

APPLICATION :

This specification refers to an inverter which operates a cold cathode fluorescent lamp for a liquid-crystal display module.

This inverter is designed for the 12.1” TFT LCD-modules.

ELECTRICAL CHARACTERISTICS:

ITEM	MIN	TYPE	MAX	UNIT	REMARKS
Input Voltage	4.5	5	5.5	V/DC	
Input Current	-	900	-	mA/DC	at Vin=5V
Inrush Current	-	-	4	A/AC	Less than 1ms
Lamp Current	5.5	6.0	6.5	mA/AC	BRIG:2.5V
	2.5	3.0	3.5	mA/AC	BRIG:0V
Output Voltage	-	560	-	V/AC	
Frequencey	-	60	-	KHz	
Starting Voltage	1000	-	-	V/AC	
BKLO	0	-	3.3	V/DC	ON = 3.3V
BRIGADJ	0	-	2.5	V/DC	

Interface Specification:

J1 (Connector 6 Pin) Inverter To M/B Connector

PIN	SIGNAL
1	B+
2	B+
3	GND
4	GND
5	BRIGADJ
6	BKLO

Adapter

Configuration :

3-wire input AC line (line, neutral, FG)

Input characteristics:

Input Voltage: 100 ~ 240 +10%vac,Full range
Input Frequency: 47 ~ 63 Hz
Input Current : 1.6A max @115VAC,at full load.
0.8A max @230VAC,at full load.
Efficiency: 80 % (min) .at full load .

Output characteristics:

Output power: 65W (max)

Output Current:

ITEM	TOLERANCE	OUTPUT CURRENT	
Output voltage	(Accuracy)	Min	Max
+20Vdc (main)	+/- 5%	0	3.25A

Regulation:

VOLTAGE	TOLERANCE	REGULATION
+20Vdc (main)	+/- 5 %	19 ~ 21 V

Ripple & Noise :

The power supply shall not exceed 250mVrms on the indicated voltage for 60Hz or 50Hz ripple, switching frequency ripple and noise dynamic load variations measured with a 20MHz bandwidth. Ripple & noise are measured at the end of output cables to which are added a 0.1uf ceramic capacitor and a 10uF electrolytic capacitor.

Leakage Current:

0.75mA

Over Voltage Protection :

27V max.(do not test with external DC source).

Shutdown voltage protection:

10V max.

Over Current Protection :

The power supply will not be damaged by an over current from the output (measure at 110 Vac input).

OUTPUT VOLTAGE	LOWER	UPPER
+20 to 10.0 Vdc	3.3A	3.8A

Short circuit protection:

A short circuit place at any output will cause no damage.

ESD requirements :

The adapter shall withstand IEC PUB. **801-5** (surge) level 4 requirements.

EMI / EMC :

The radiated and conducted emissions of this AC adapter complies with **the requirements of the** FCC **PART 15,** CLASS B **&** EN55022**.**

SAFETY :

This AC adapter is designed to meet the following standards:

UL 1950 LISTED
CUL LEVEL 3
TUV EN60950

Battery Pack

Recharging by AC Power

The battery pack automatically recharges when it is installed into a computer that is connected to an AC power supply. You can still use the computer when it is recharging. To fully recharge the battery will take several hours and may be slightly longer if the computer is being used while the battery is recharging.

Proper Handling of the Battery Pack

DO NOT disassemble the battery pack under any circumstances.
DO NOT expose the battery to fire or high temperatures, it may explode.
DO NOT connect the metal terminals (+, -) together.

Battery Information

Proper care will improve the performance and extend the life and cycle life of the battery. Follow these guidelines to get the best use out of the battery.

Power loss

When not in use, a battery will gradually lose its power, this is normal. The rate of power loss depends on the battery type and is approximately:

0.2% / Day for a Li-Ion Battery

Battery storage

Outside the computer

If you are going to store a battery outside the computer for an extended period you must:

- Charge the battery to at least 40% capacity prior to storage.
- Follow steps 1 through 3 approximately every 30 days:

1. Completely recharge the battery.
2. Use the battery until it is fully discharged
3. Recharge the battery to at least 40% capacity.

Inside the computer

If a fully charged battery is stored inside the computer and the battery is not used for more than 30 days, you must follow these steps:

1. Completely recharge the battery.
2. Use the battery until it is fully discharged
3. Recharge the battery to 100% capacity.

(In this case it doesn't matter whether or not the computer is being used)

Note: *An empty battery will become damaged if stored too long and by following these steps the battery cycle life and the battery life will increase.*

Battery Testing

Testing a battery while its temperature remains high could possibly cause inaccurate measurements, therefore we strongly recommend:

- Waiting 30 minutes before testing a battery that has just been fully charged.
- Waiting at least 30 minutes before recharging a fully discharged battery.

Note: *All battery testing should be done on a fully charged or fully discharged battery.*

Battery alarm

The battery alarm is activated by a program and will sound when the battery power is low.

Note: *If a fully discharged battery has been charged for less than 3 minutes, this program will not be activated.*

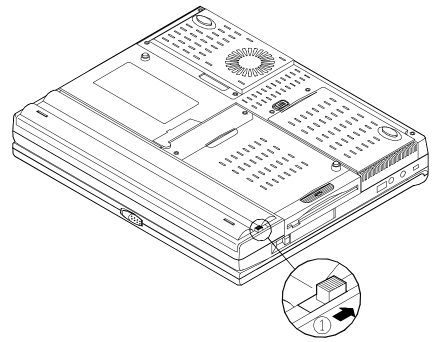
This happens when these 3 steps occur:

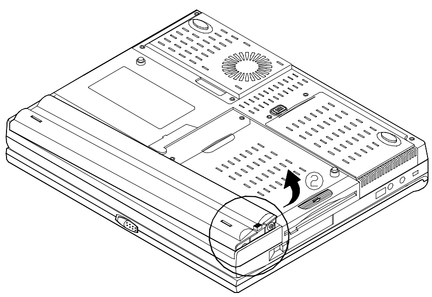
1. *The computer is being used and the low battery alarm sounds.*
2. *The AC adapter is connected to charge the battery while the computer continues to be used.*
3. *The adapter is unplugged within the first 3 minutes of charging.*

After this sequence of steps, the computer will eventually shutdown without the low battery alarm sounding and you will lose any work you have entered and not saved. Therefore you should make sure that the AC adapter is firmly plugged into the computer when charging the battery.

Removing the battery pack

1) Turn the computer over.
2) Slide the latch in the direction indicated ①.



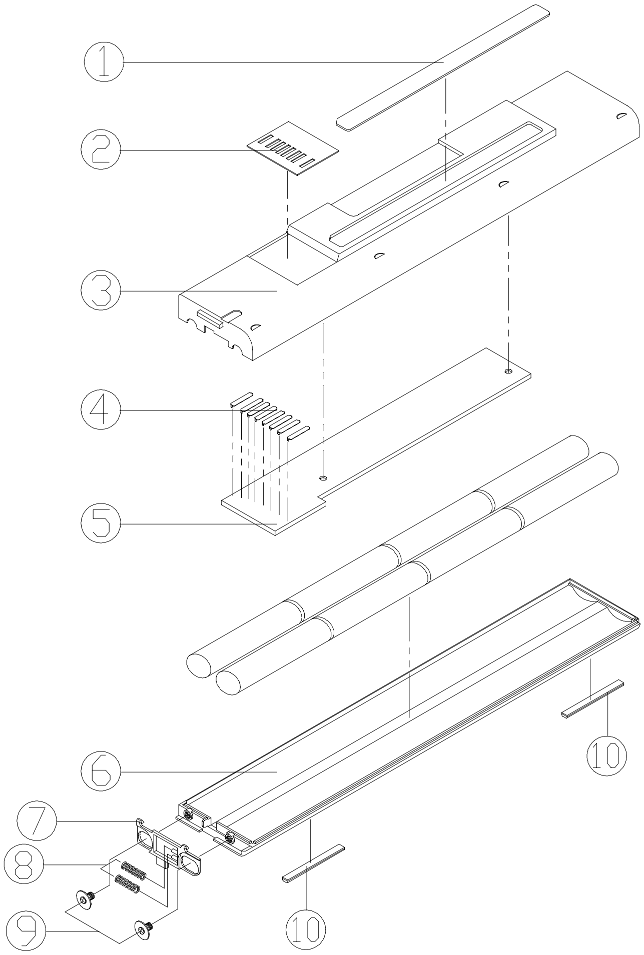


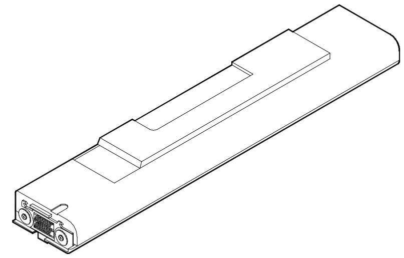
3) Gently grasp the battery pack on the edge below the latches and lift it out of the bay ②.

Inserting the battery pack

1) Turn the computer over.
2) Place the battery in its bay inserting the side without the latch in first.
3) Push down on the side with the latch until it clicks into place.

Battery diagram

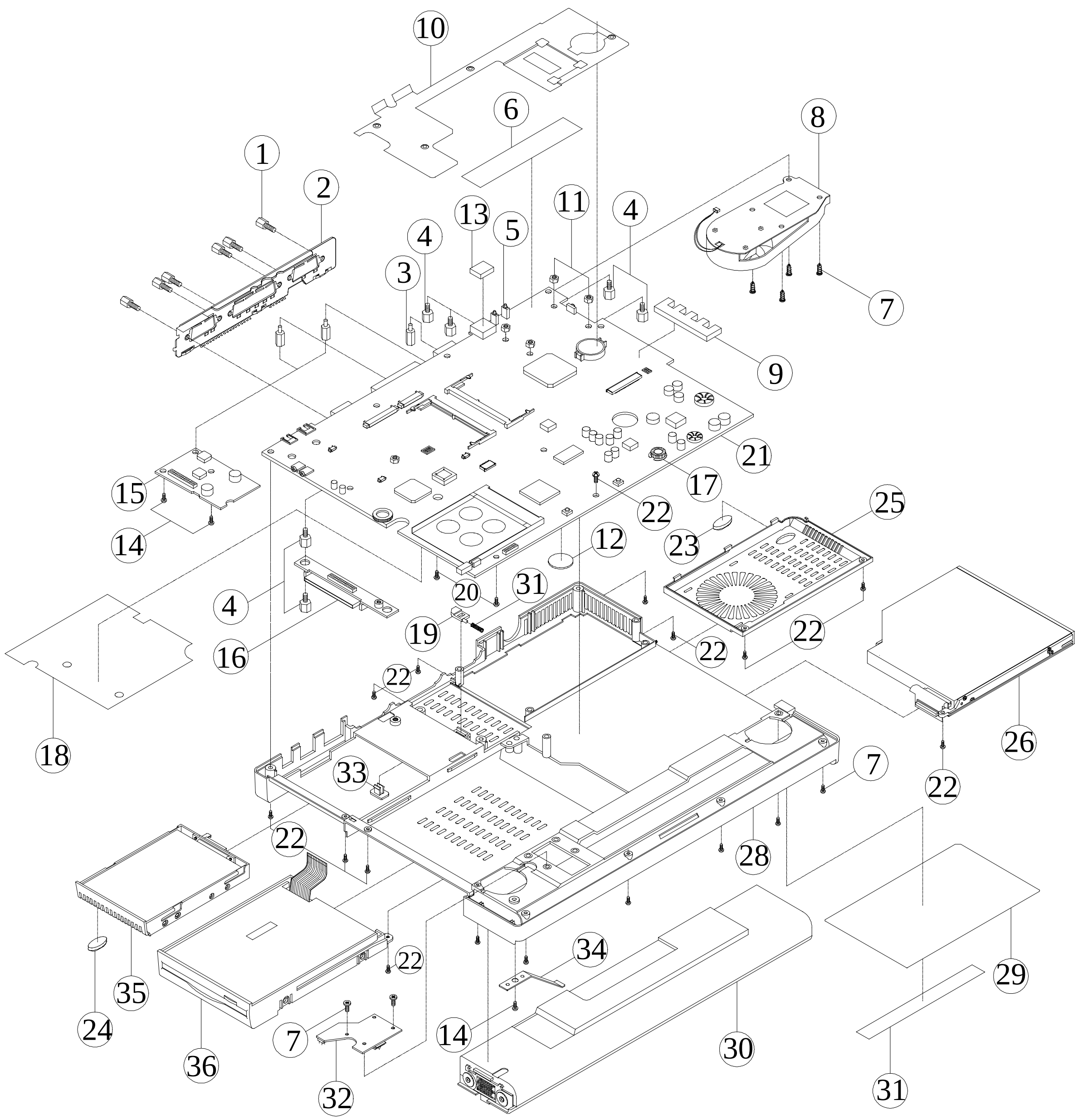




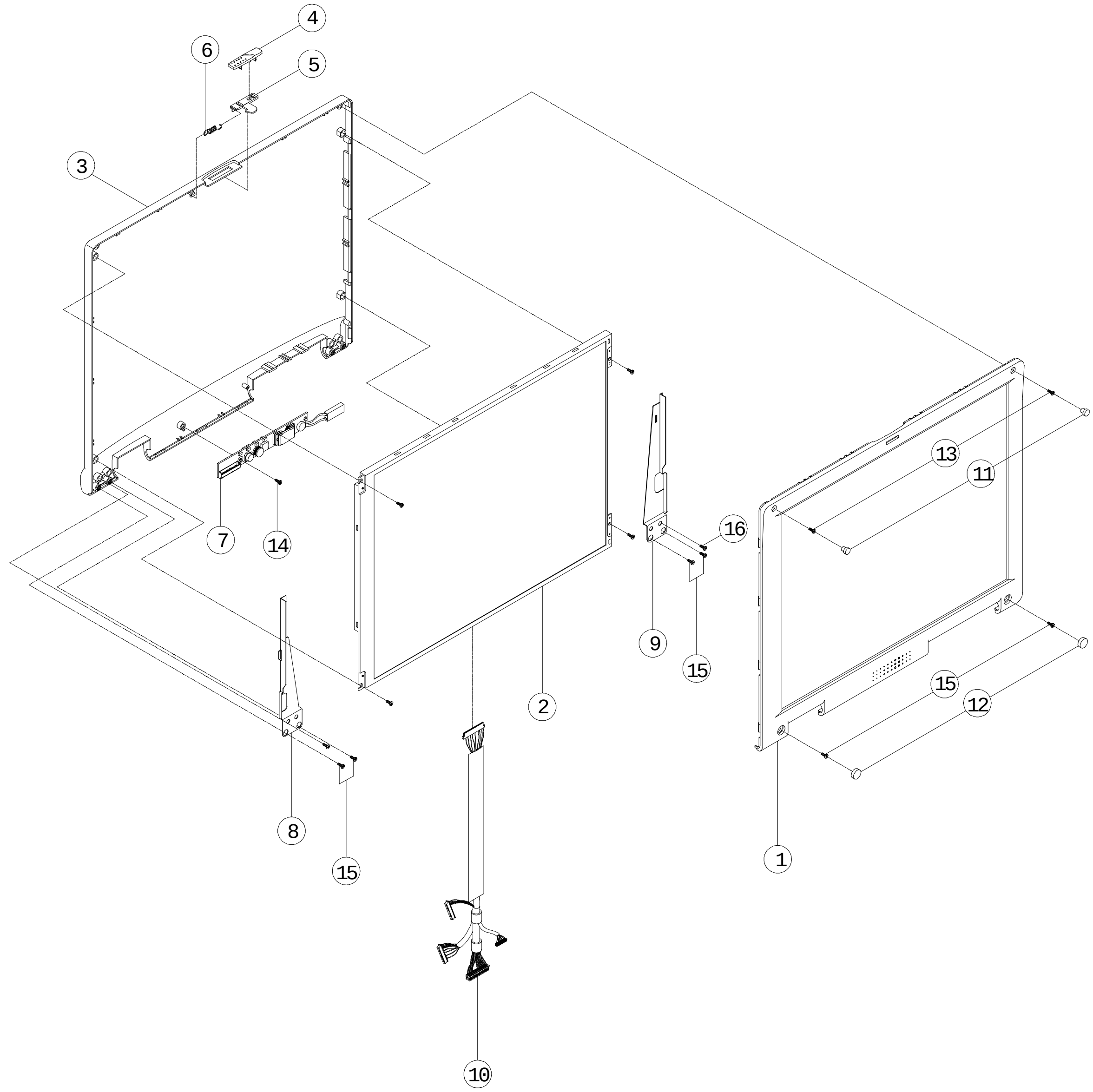
BATTERY PACK ASS'Y

ITEM	PART NAME	PART NO	REMARK
1	BATTERY LABEL	45-5100M-010	
2	MYLAR FOR BATT.CONTACT PLATE	40-5105M-010	
3	BATTERY TOP COVER	42-5107M-010	
4	CONTACT PLATE FOR BATT.	38-51020-010	
5	BATTERY CONNECTOR BOARD	76-5100M-010	
6	BATTERY BOTTOM CASE	42-5107M-020	
7	BATTERY LOCK	42-5107M-020	
8	SPRING FOR BATTERY LOCK	38-31B80-210	
9	SCREW	35-09020-2RE	
10	RUBBER PAD FOR BATT.BOTTOM.CASE	47-5102M-010	

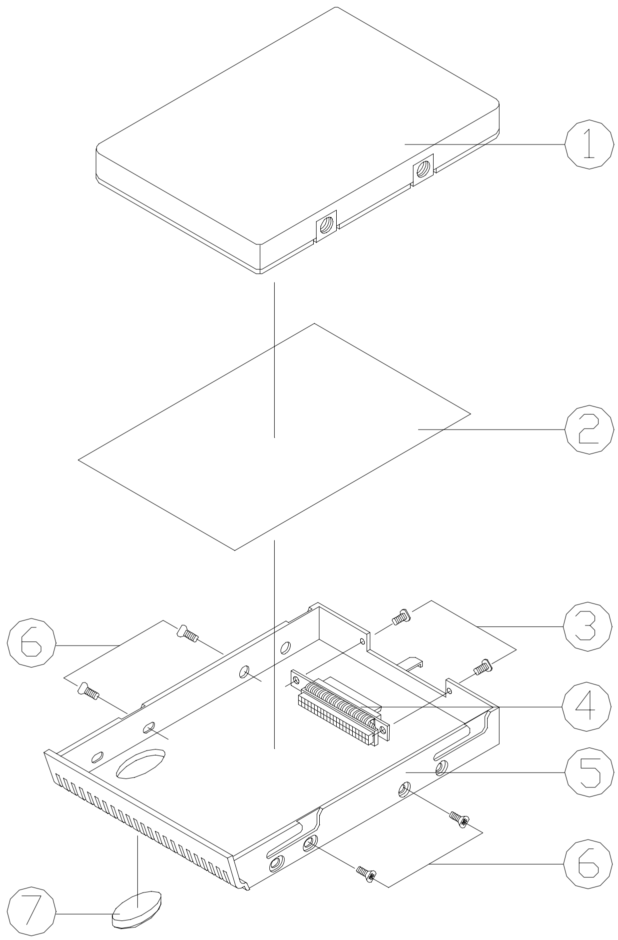
Component diagrams and part numbers

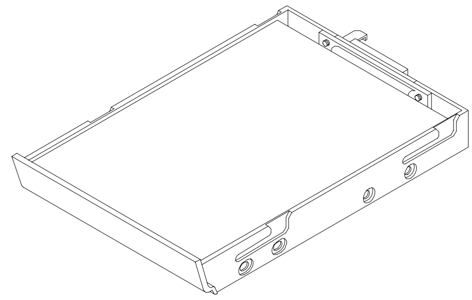


ITEM	PART NAME	PART NO	REMARK
1	HEX STUD(11MM)	34-07009-011	
2	REAR BRACKET MODULE	33-51S0Q-100	
3	HEX STUD(11.5MM)	34-51S0S-010	
4	HEX STUD(4.2MM)	34-8500S-03A	
5	LED HOLDER 3P	47-51C6S-010	
6	MYLAR FOR M/B 120*25*0.15t	40-51S5S-030	
7	SCREW WITH SPRING	35-41105-12A	
8	HEAT SINK MODULE*1	31-51S0N-100	
9	LED SPONGE FOR M/B	47-51092-010	
10	CHIP SET PLATE FOR 5100S	33-51S0S-020	
11	NUT SN M2.5	36-05111-250	
12	MYLAR FOR BATTERY	40-8505M-010	
13	SPONGE FOR USB CONN.(M/B)	47-35093-020	
14	SCREW	35-41120-3RA	
15	DC/DC Board VD1.0	77-51S0C-D01	
16	HDD TRANSFER BOARD	77-51S0N-D00	
17	MYLAR FOR CHARGER(2)	40-31B5S-010	
18	MYLAR FOR M/B(FDD)	40-51S0S-020	
19	HDD LOCK	42-85083-011	
20	SCREW	35-41120-3RA	
21	MAIN BOARD	77-51S00-D01	
22	SCREW	35-06125-6RA	
23	BOTTOM CASE RUBBER PAD	47-51023-110	
24	BOTTOM CASE RUBBER PAD	47-51C2I-010	
25	CPU COVER	42-51073-031	
26	CD-ROM ASS'Y DWG	79-5102Z-020	TEAC(CD-224E-A82)
27	DVD-ROM ASS'Y DWG	79-5102V-010	Reference Ass'y Dwg (99-51C00-050)
28	BOTTOM CASE FOR 5100S	39-51S13-01A	
29	FCC DOC LABEL(NO BRAND)	45-51003-020	
30	BATTERY ASS'Y	79-51S2M-000	
31	FCC DOC LABEL	45-51S03-010	
31	SPRING FOR HDD LOCK KNOB	38-00R26-010	
32	BATTERY BOARD	77-5100Q-D00	
33	HDD LOCK KNOB	42-31B8I-020	
34	K/B SPRING PLATE	38-35020-010	
35	HDD ASS'Y DWG	79-51S2I-010	
36	FDD ASS'Y DWG	79-51S2J-010	



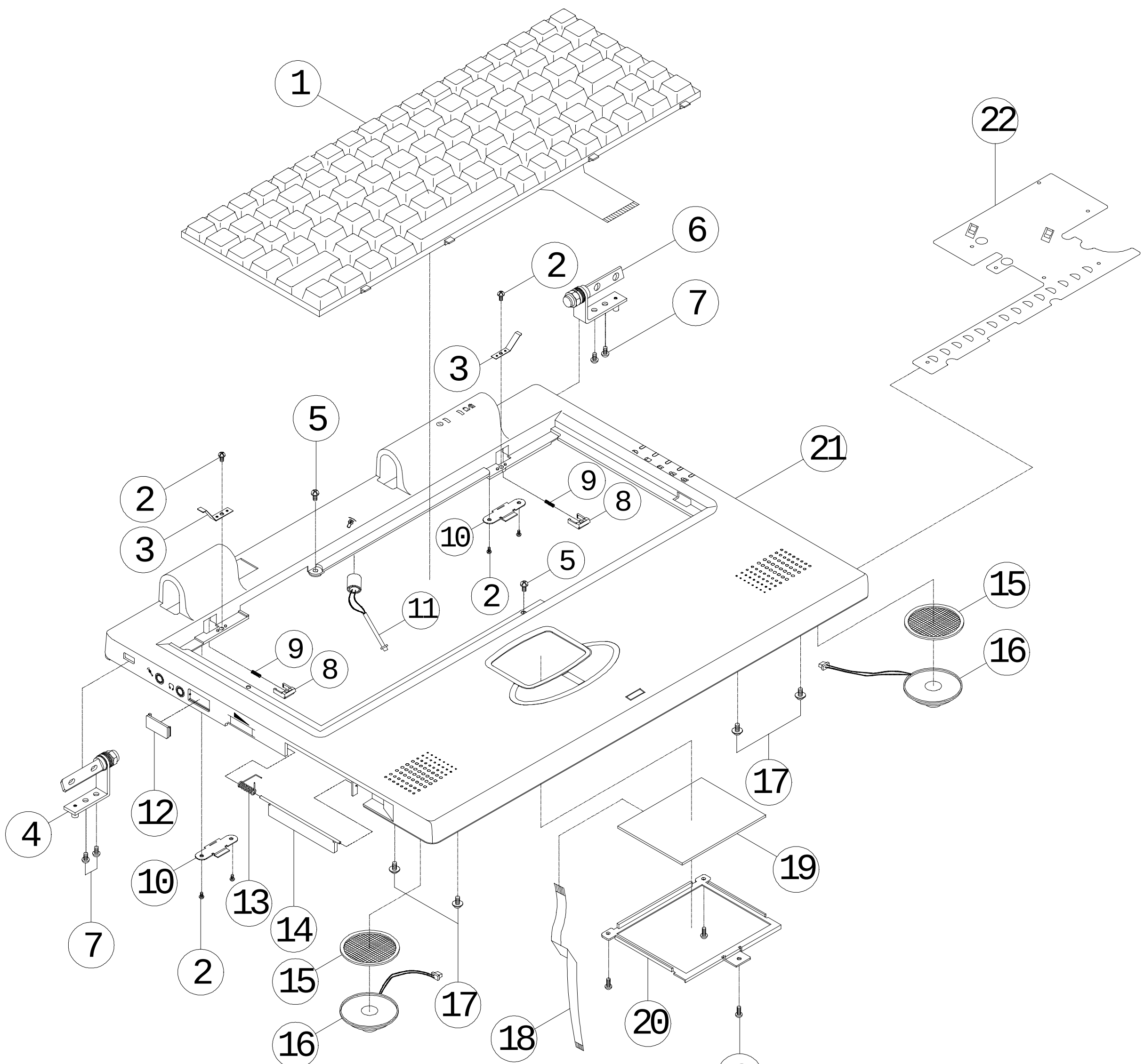
ITEM	PART NAME	PART NO.	REMARK
1	DISPLAY FRONT PANEL	39-51011-01E	FOR 12.1" • • • •
2	LCD 12.1" TFT SANYO TM121SV-02L07	50-F1255-S01	12.1" SV
3	DISPLAY BACK PANEL	39-51S01-02A	FOR 12.1 SANYO
4	HOOK KNOW	42-51081-010	
5	HOOK	42-510A1-010	
6	SPRING FOR HOOK EXTEN	38-10R35-021	φ 0.35
7	INVERTER	43-51S0R-010	
8	LCD BRACKET (L)	33-51001-050	FOR LG (S2) 12.1
9	LCD BRACKET (R)	33-51001-040	FOR LG (S2) 12.1
10	CABLE 1H/2H 28AWG 35P 203mm	43-51S01-010	SANYO
11	DISPLAY RUBBER PAD	47-51021-010	UP
12	DISPLAY RUBBER PAD	47-51021-020	BOTTOM
13	SCREW	35-01120-4R0	M2*4L,P,NI,ICT
14	SCREW	35-41120-3RA	M2*0.4P*3L,B,NI,ICT,NY
15	SCREW	35-84130-6RA	M3*6L,K,BK/0,ICT,NY
16	SCREW	35-B6130-4RA	M3*4,K1,BZ,ICT,NY



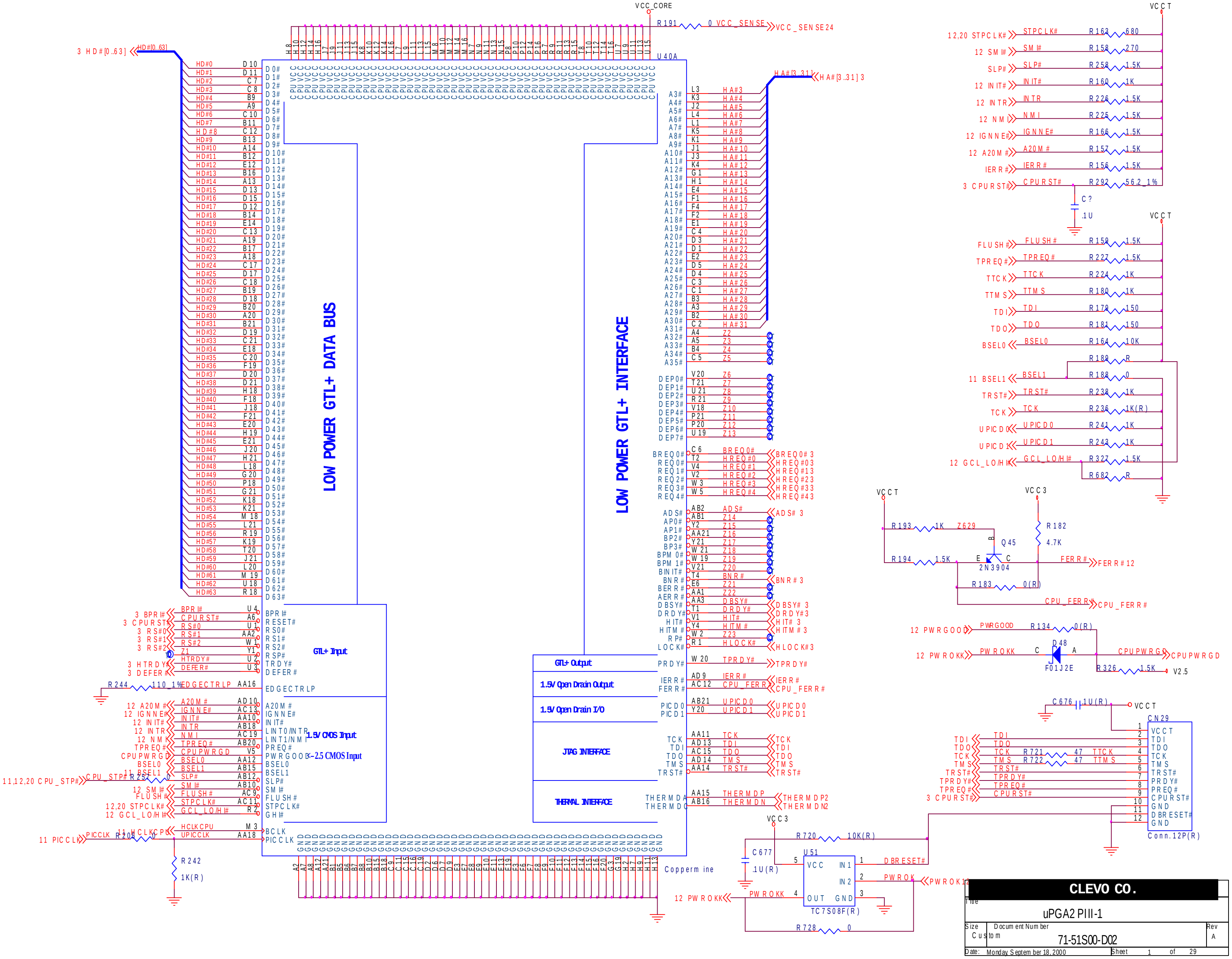


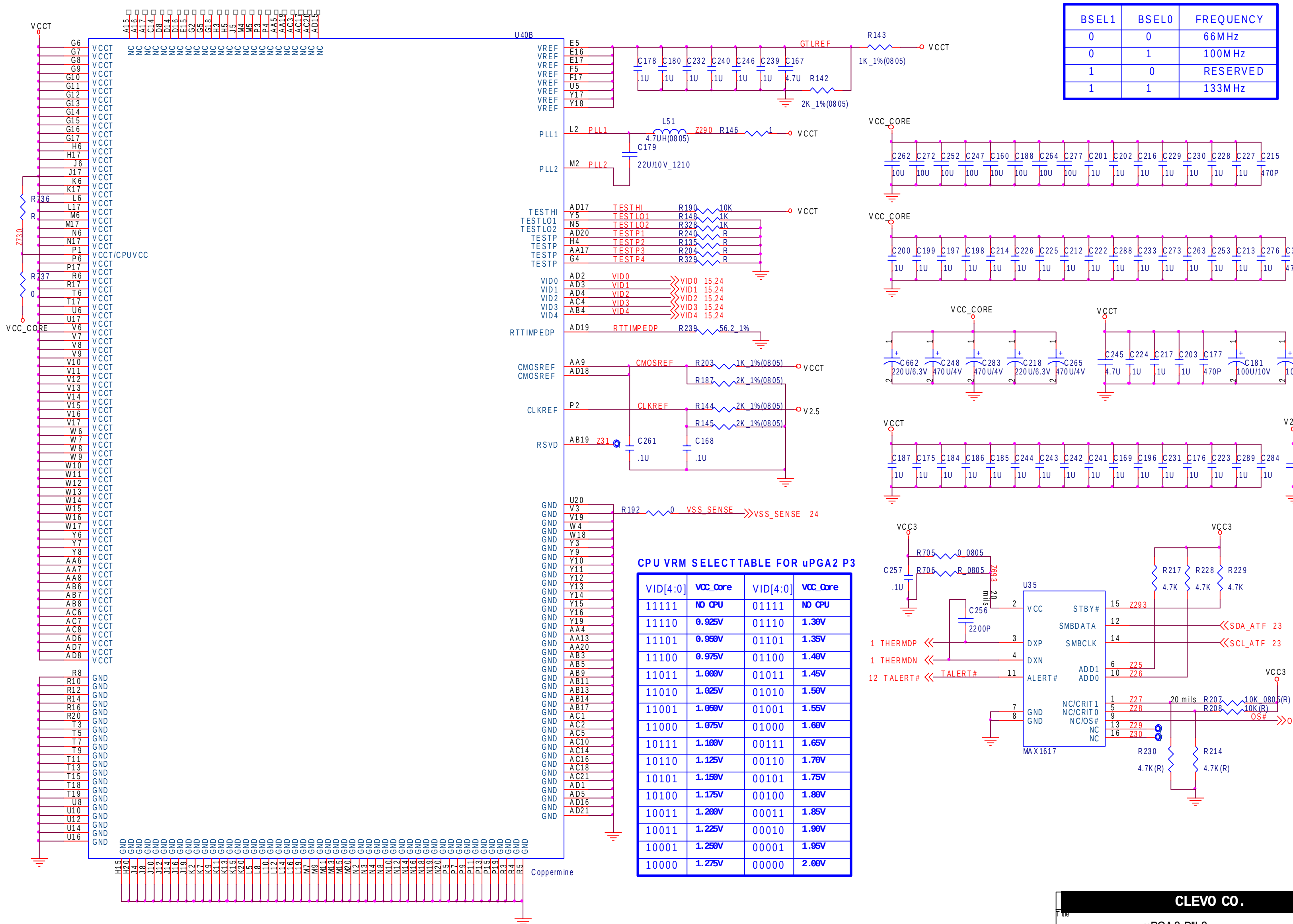
HDD ASS'Y DWG

ITEM	PART NAME	PART NO	REMARK
1	2.5" HDD (12.7MM)	85-12210-54T	TOSHIBA
1	2.5" HDD (12.7MM)	85-12210-545	HITACHI
1	2.5" HDD (12.5MM)	85-12210-544	IBM
2	HDD MYLAR	40-6205I-010	
3	SCREW	35-B4125-5RA	
4	FPC CABEL	43-51S0I-010	
5	HDD CASE	42-51S7I-010	
6	SCREW	35-B6130-4RA	
7	RUBBER PAD	47-51C2I-010	


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ITEM	PART NAME	PART NO	REMARK
1	KEYBOARD	80-51S08-7G0	
2	SCREW	35-41120-3RA	
3	K/B SPRING PLATE	38-35020-010	
4	HINGE (L) ASS'Y	79-5100Y-021	
5	SCREW	35-06125-6RA	
6	HINGE (R) ASS'Y	79-5100Y-011	
7	SCREW	35-B1130-5RA	
8	K/B LOCK KNOB	42-51087-010	
9	SPRING FOR HDD LOCK KNOB	38-00R26-010	
10	K/B LOCK BRACKET FOR TOP CASE	33-51007-011	
11	CABLE PHONE+RUBBER	28-H7J02-151	AWG30 2P 150mm
12	IR LENS	42-510I2-011	
13	SPRING(L) FOR CARD BUS DOOR	38-51020-020	
14	CARD BUS DOOR(L)	42-5107P-020	
15	SPEAKER SPONGE	47-5109T-010	
16	SPK+CON	23-C3010-211	
17	SCREW	35-01020-2RE	
18	FFC CABLE	27-9350C-E20	
19	G/P TP-3 LOGITECH	87-62070-081	
20	G/P HOLDER	33-51002-010	
21	TOP CASE ASS'Y	39-51S02-010	
22	PLATE FOR TOP CASE	33-51S02-010	


LOW POWER GTL+ DATA BUS
LOW POWER GTL+ INTERFACE
GTL+ Input
GTL+ Output
1.5V Open Drain Output
1.5V Open Drain I/O
1.5V CMOS Input
JTAG INTERFACE
THERMAL INTERFACE
VCC_CORE
VCC_SENSE24
U40A
VCCT
VCC3
2N3904
TC7S08F(R)
Copperm ine
Conn.12P(R)
CLEVO CO.
uPGA2 PIII-1
71-51S00-D02
Monday, September 18, 2000
Sheet 1 of 29



FREQUENCY SELECTTABLE

BSEL1	BSEL0	FREQUENCY
0	0	66MHz
0	1	100MHz
1	0	RESERVED
1	1	133MHz

CPU VRM SELECTTABLE FOR uPGA2 P3

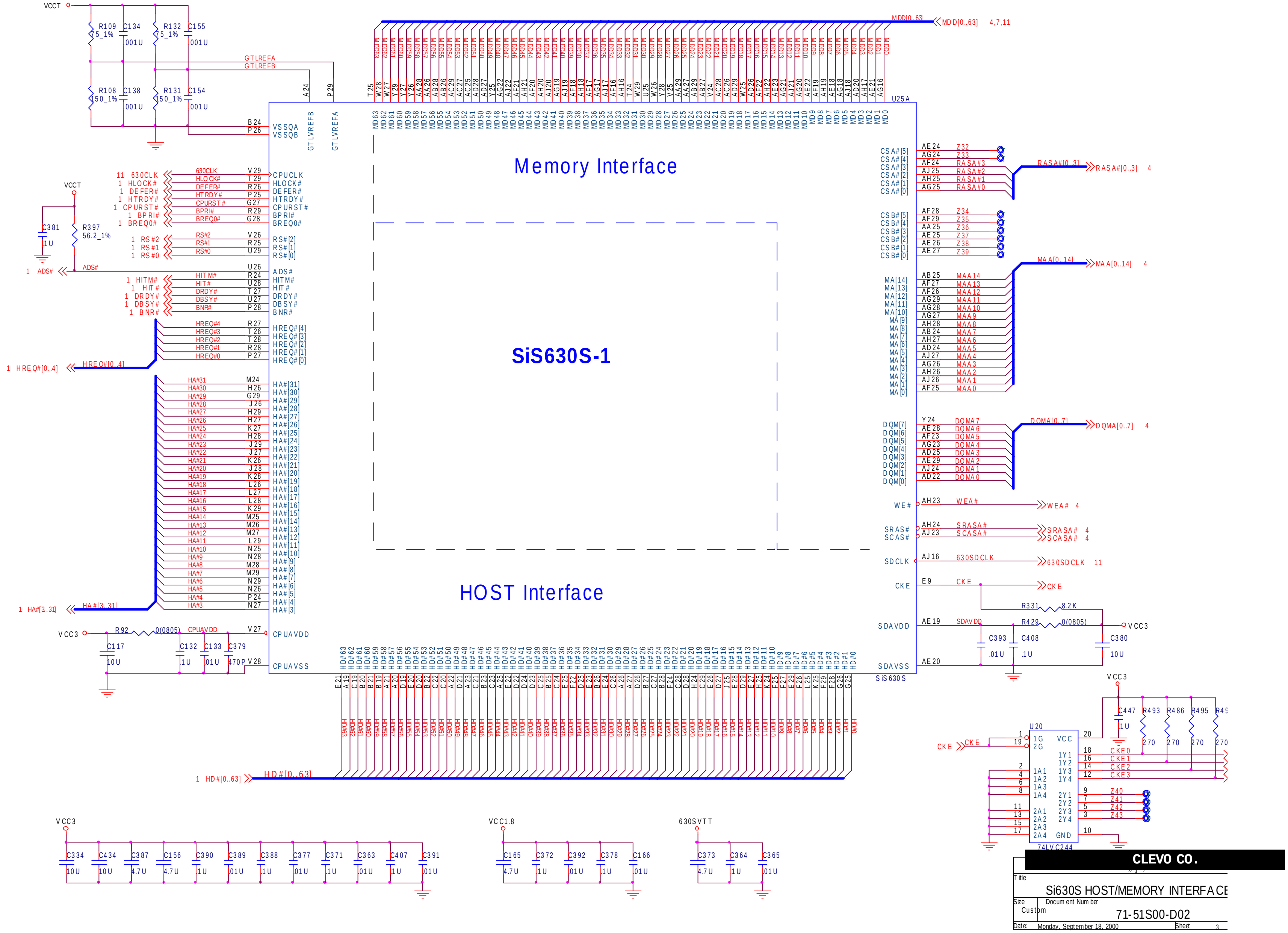
VID[4:0]	VCC_Core	VID[4:0]	VCC_Core
11111	NO CPU	01111	NO CPU
11110	0.925V	01110	1.30V
11101	0.950V	01101	1.35V
11100	0.975V	01100	1.40V
11011	1.000V	01011	1.45V
11010	1.025V	01010	1.50V
11001	1.050V	01001	1.55V
11000	1.075V	01000	1.60V
10111	1.100V	00111	1.65V
10110	1.125V	00110	1.70V
10101	1.150V	00101	1.75V
10100	1.175V	00100	1.80V
10011	1.200V	00011	1.85V
10011	1.225V	00010	1.90V
10001	1.250V	00001	1.95V
10000	1.275V	00000	2.00V

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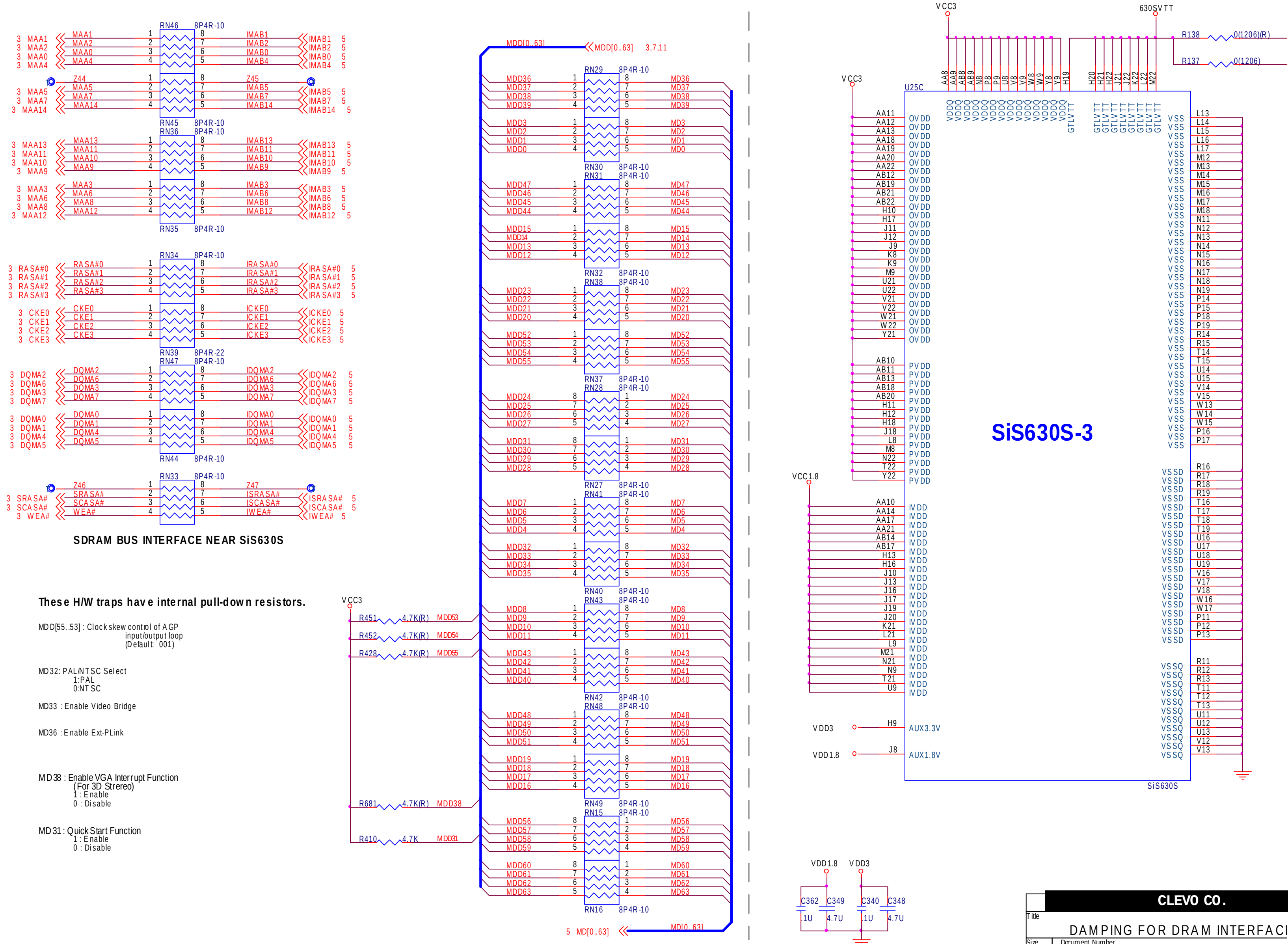
Title: uPGA2 PIII-2

Size: Custom | Document Number: 71-51S00-D02

Date: Monday, September 18, 2000 | Sheet 2 of



Memory Interface
SiS630S-1
HOST Interface
U25A
SiS630S
VCCT
VCC3
VCC1.8
630SVTT
MDD[0..63]
HD#[0..63]
HA#[3..31]
HREQ#[0..4]
RASA#[0..3]
MAA[0..14]
DQMA[0..7]
WEA#
SRASA#
SCASA#
630SDCLK
CKE
CPUAVDD
CPUAVSS
SDAVDD
SDAVSS
U20
74LVC244
CLEVO CO.
Title
Si630S HOST/MEMORY INTERFACE
Size
Custom
Document Number
71-51S00-D02
Date
Monday, September 18, 2000
Sheet
3

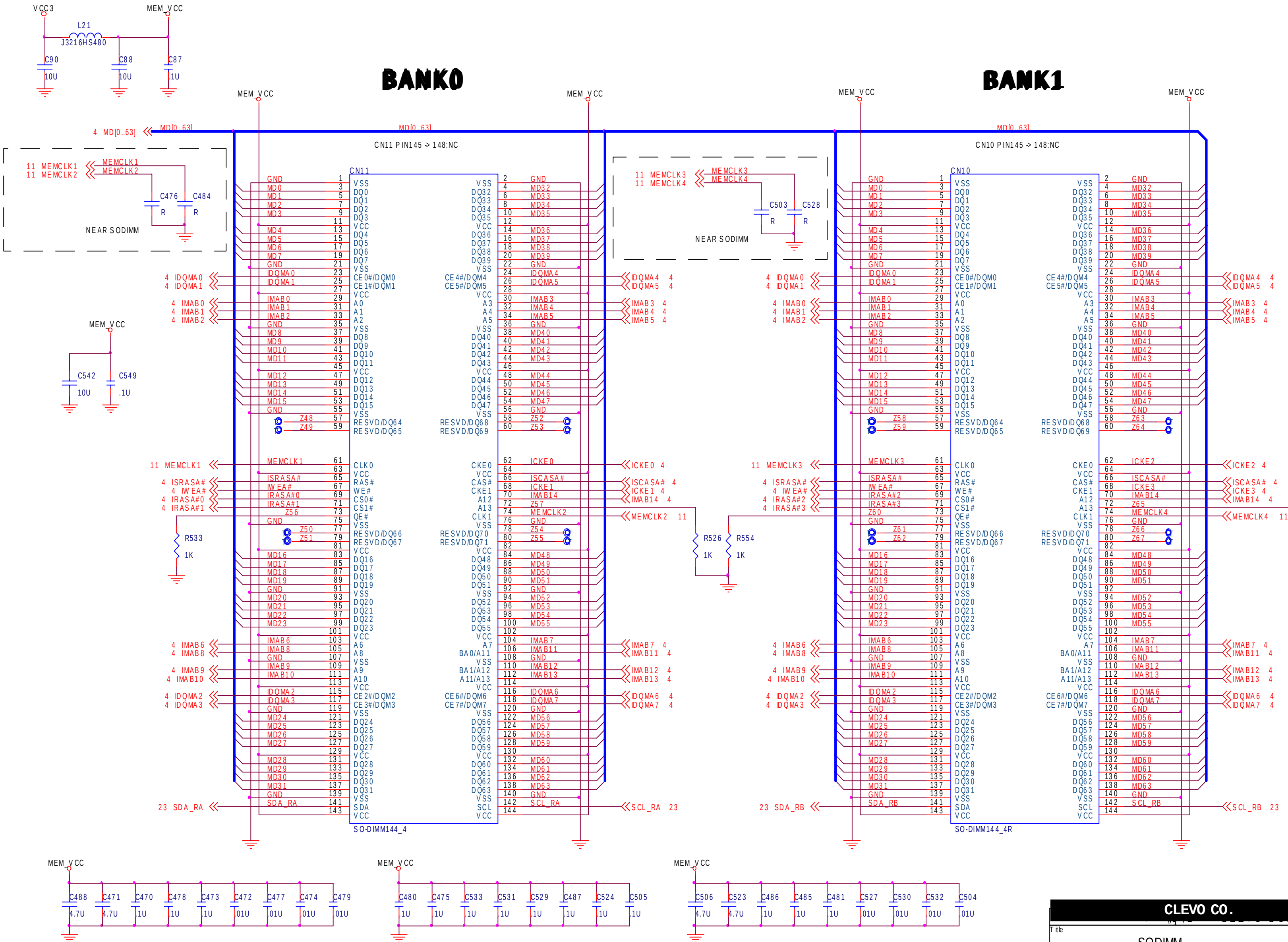


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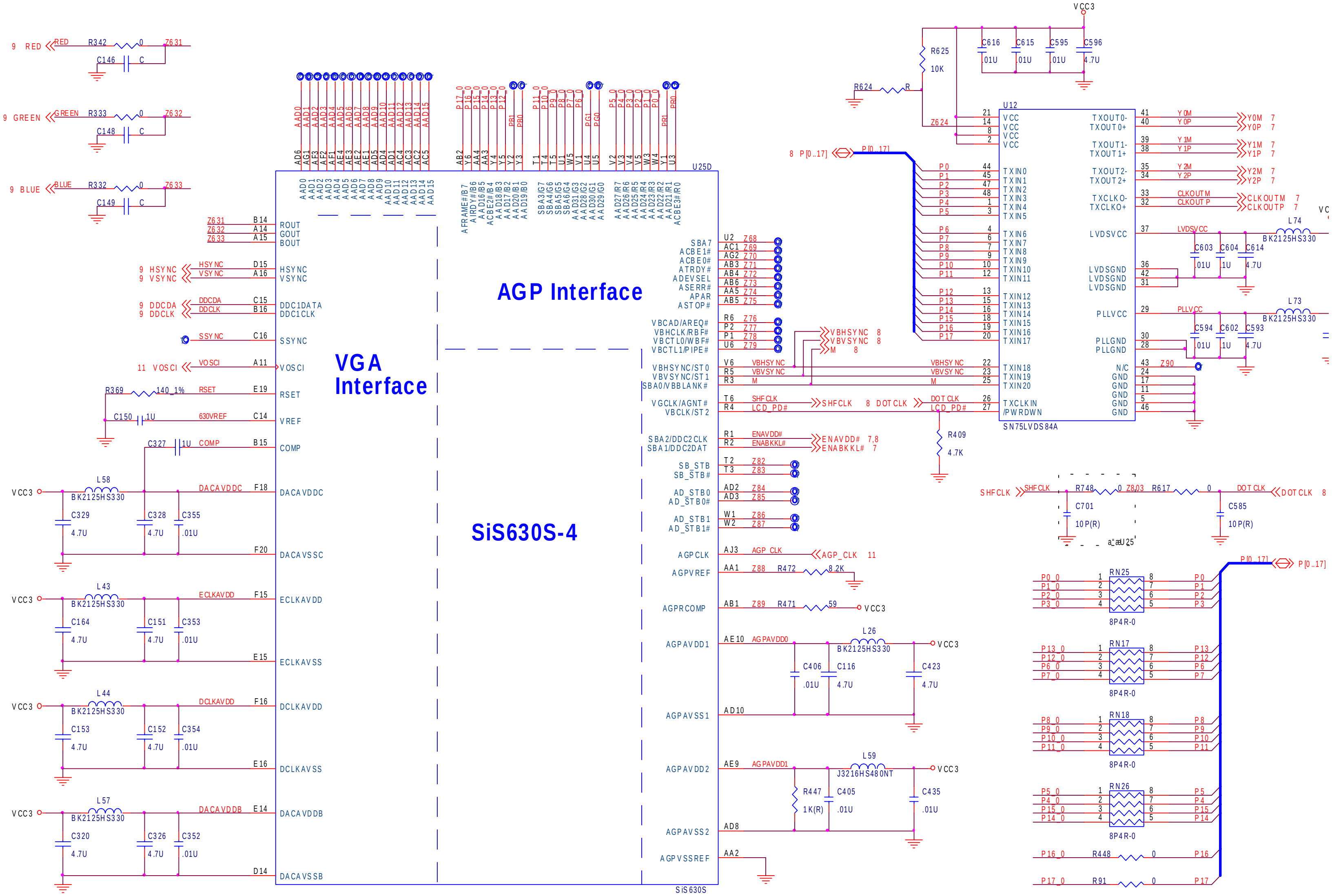
Title: DAMPING FOR DRAM INTERFACE

Size: B — Document Number: 71-51S00-D02

Date: Monday, September 18, 2000 — Sheet 4 of



CLEVO CO.		
Title	SODIMM	
Size B	Document Number 71-51S00-D02	
Date: Monday, September 18, 2000	Sheet 5	of



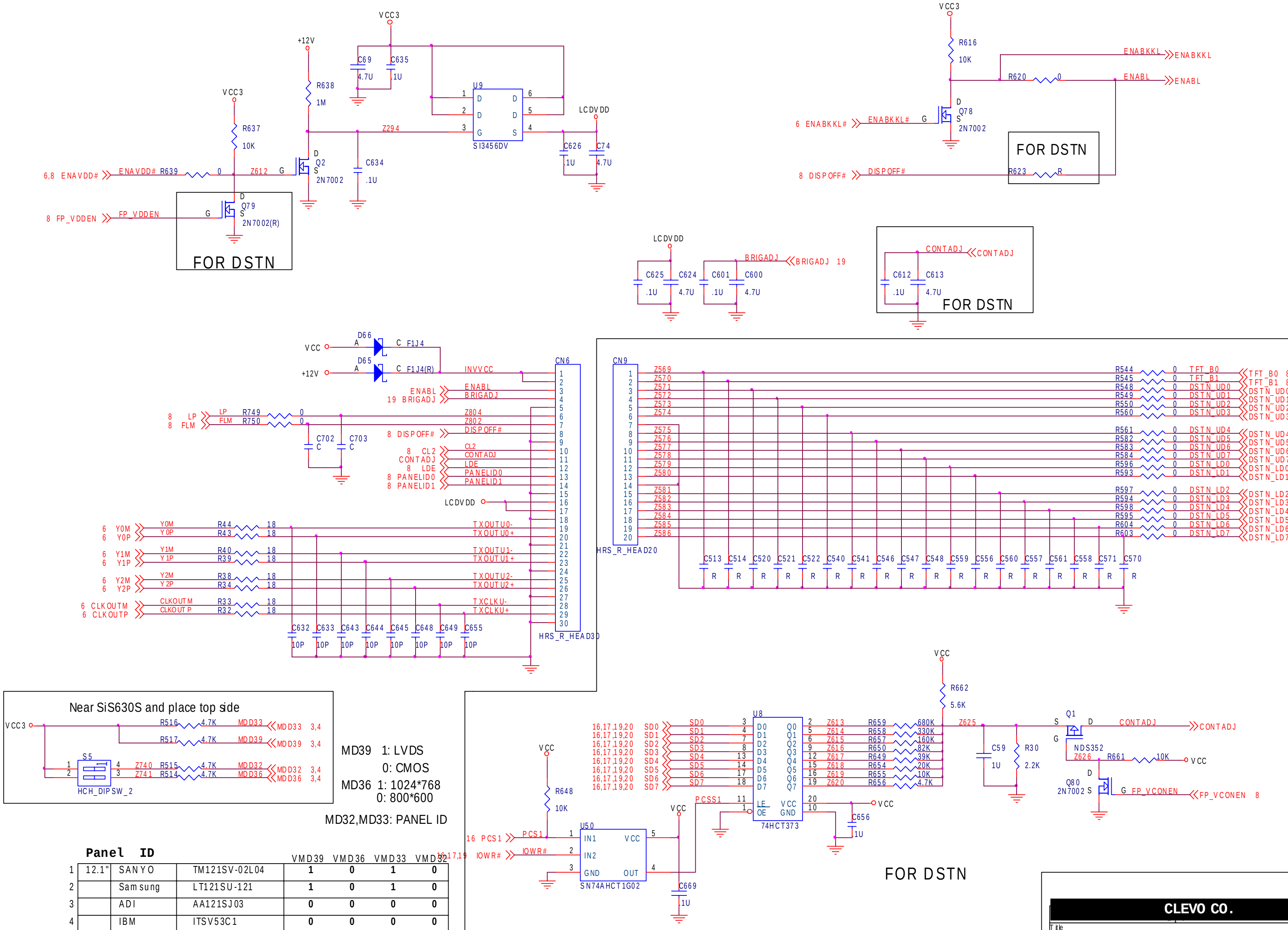
CLEVO CO.

Title: SiS630S VGA INTERFACE

Size: Custom | Document Number: 71-51S00-D02

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MD39 1: LVDS
0: CMOS
MD36 1: 1024*768
0: 800*600
MD32,MD33: PANEL ID

Panel ID

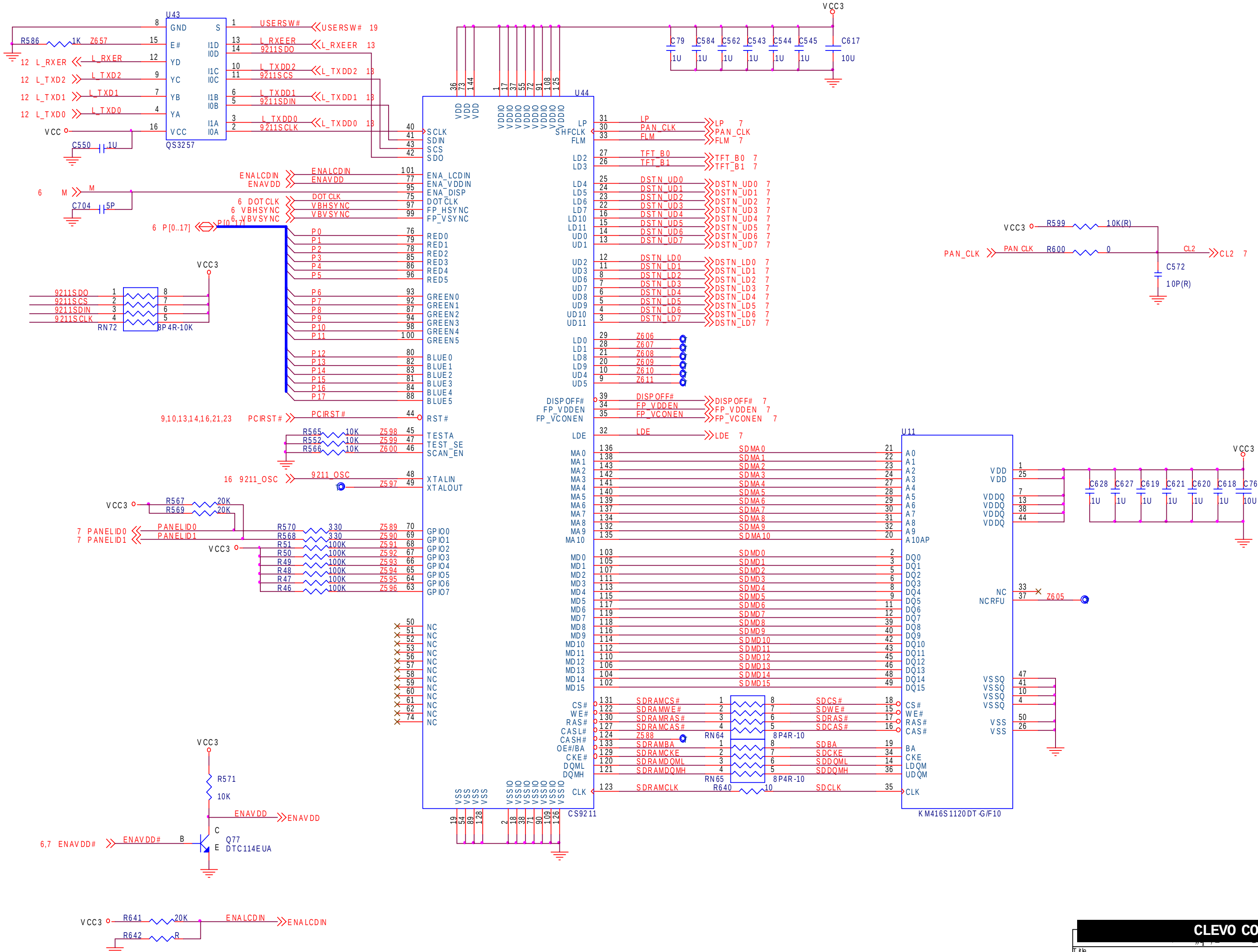
				VMD39	VMD36	VMD33	VMD32
1	12.1"	SANYO	TM121SV-02L04	1	0	1	0
2		Samsung	LT121SU-121	1	0	1	0
3		ADI	AA121SJ03	0	0	0	0
4		IBM	ITSV53C1	0	0	0	0

CLEVO CO.

Title: LCD INTERFACE

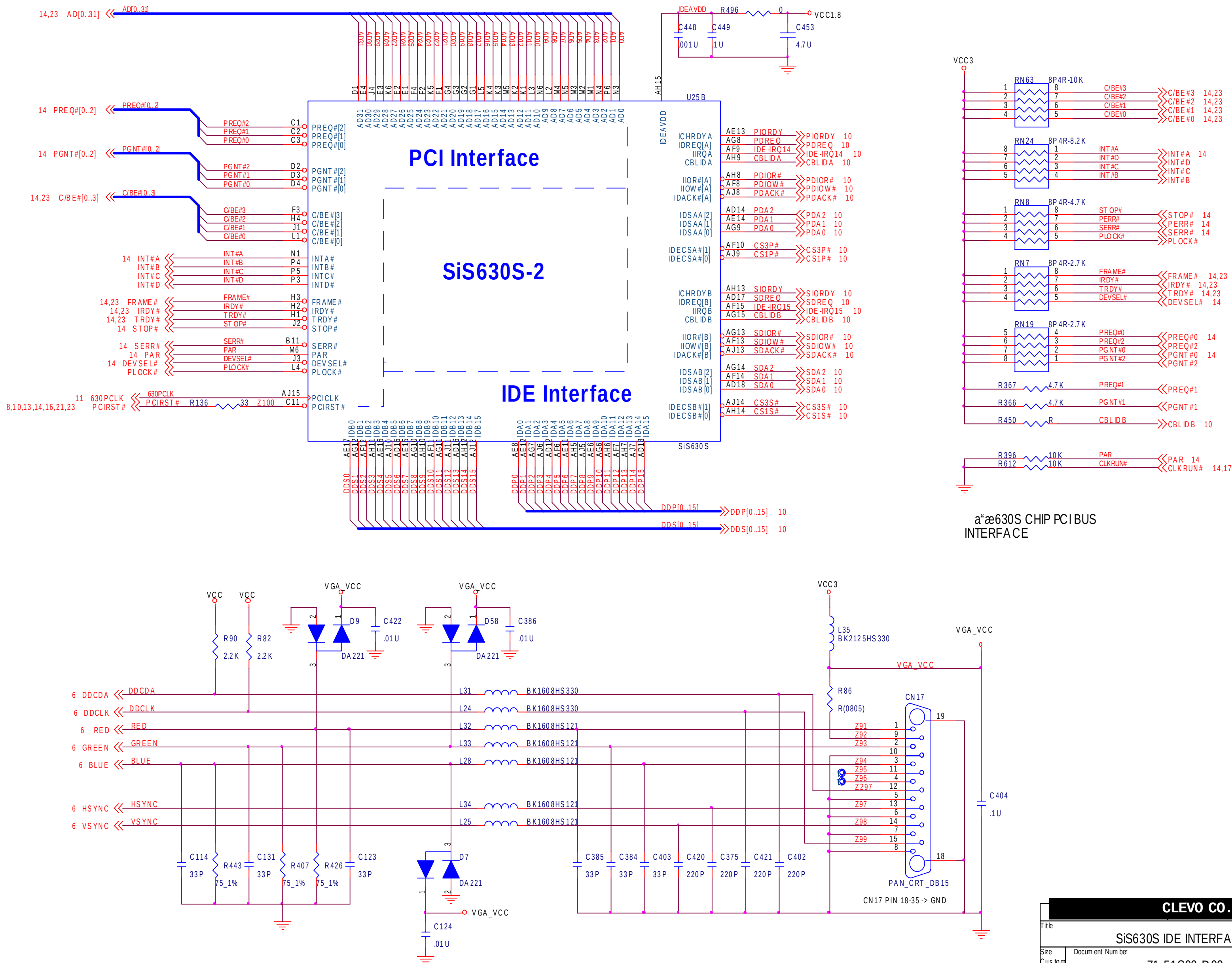
Size: B | Document Number: 71-51S00-D02

Date: Monday, September 18, 2000 | Sheet 7 of



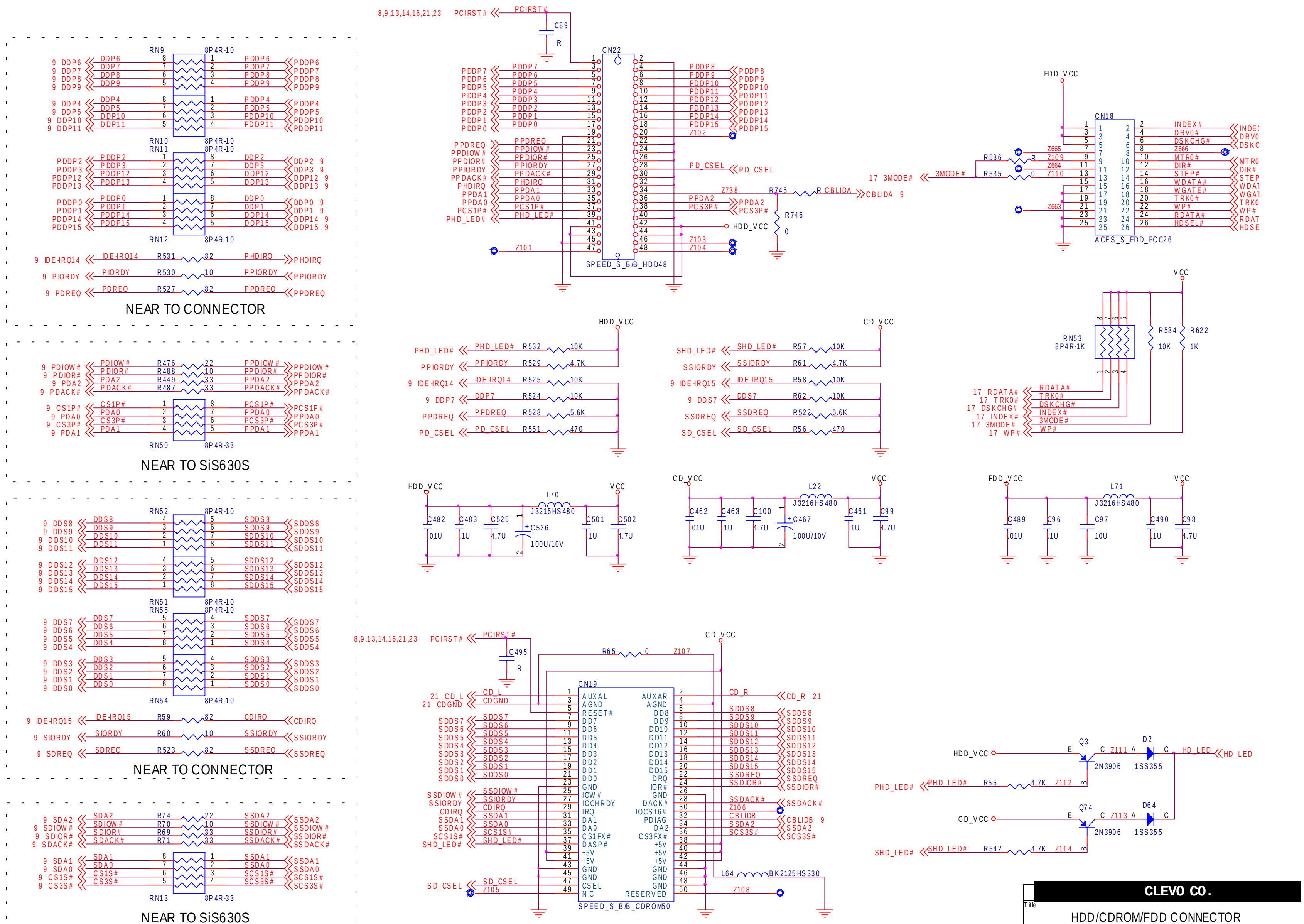
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Title	TFT TO DSTN - CS9211
Size Custom	Document Number 71-51S00-D02
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Title	SiS630S IDE INTERFACE
Size: Custom	Document Number: 71-51S00-D02
Date: Monday, September 18, 2000	Sheet 9 of



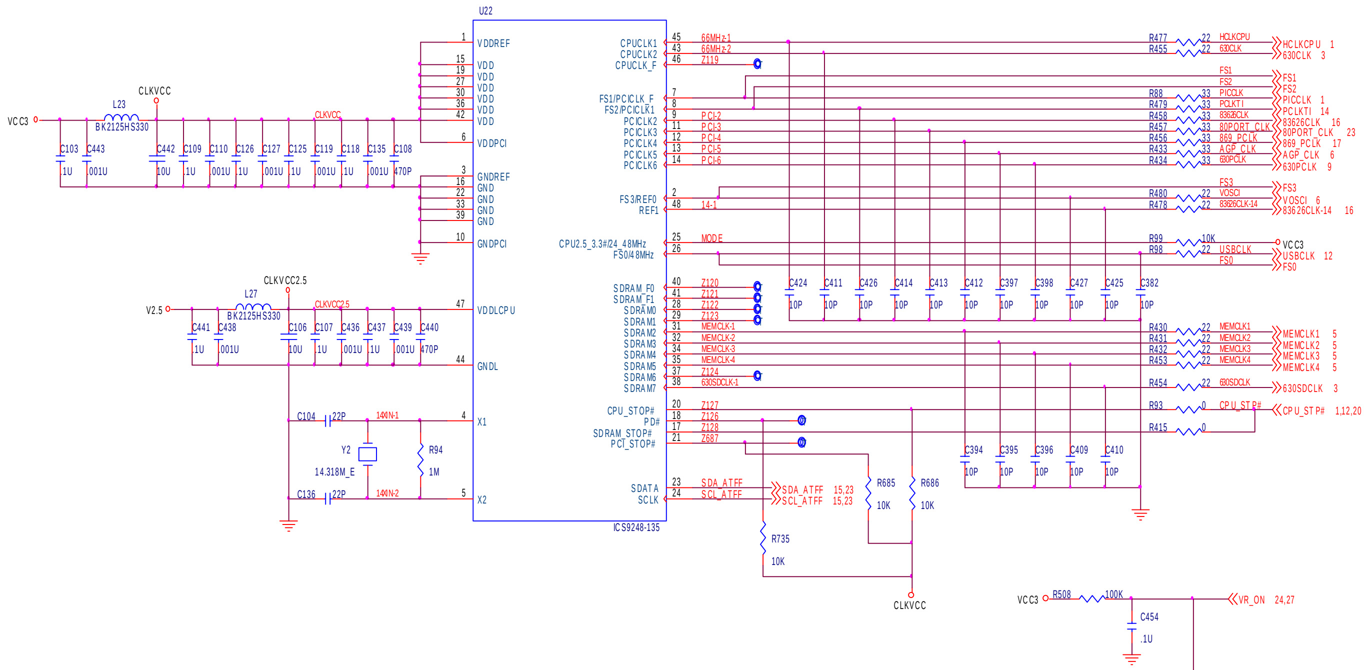
CLEVO CO.

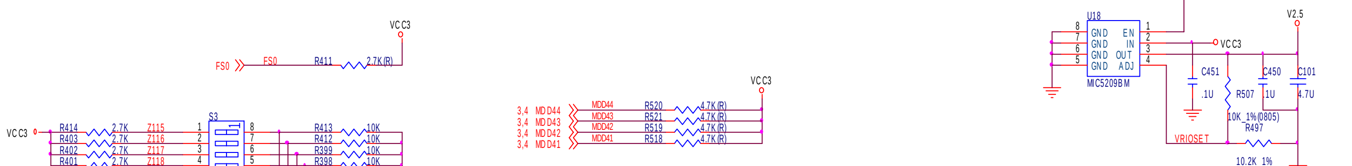
Title: HDD/CDROM/FDD CONNECTOR

Size: Custom | Document Number: 71-51S00-D02

Date: Monday, September 18, 2000 | Sheet 10 of

' ƒ„s¥ a“æCLOCK GENERATOR IC

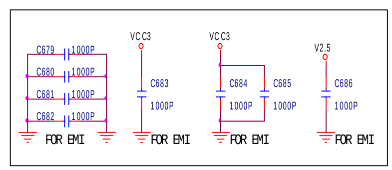




CPU Frequency Ratio Select

	MDD44 (NMI)	MDD43 (INTR)	MDD42 (A20M#)	MDD41 (IGNNE#)
1/2	0	0	0	0
1/3	0	0	0	1
1/4	0	0	1	0
1/5	0	0	1	1
2/5	0	1	0	0
2/7	0	1	0	1
2/9	0	1	1	0
2/11	0	1	1	1
1/6	1	0	0	0
1/7	1	0	0	1
1/8	1	0	1	0
Reserved	1	0	1	1
2/13	1	1	0	0
2/15	1	1	0	1
2/3	1	1	1	0
1/2	1	1	1	1

0 = Non-STUFF
1 = STUFF



SiS630S CLOCK

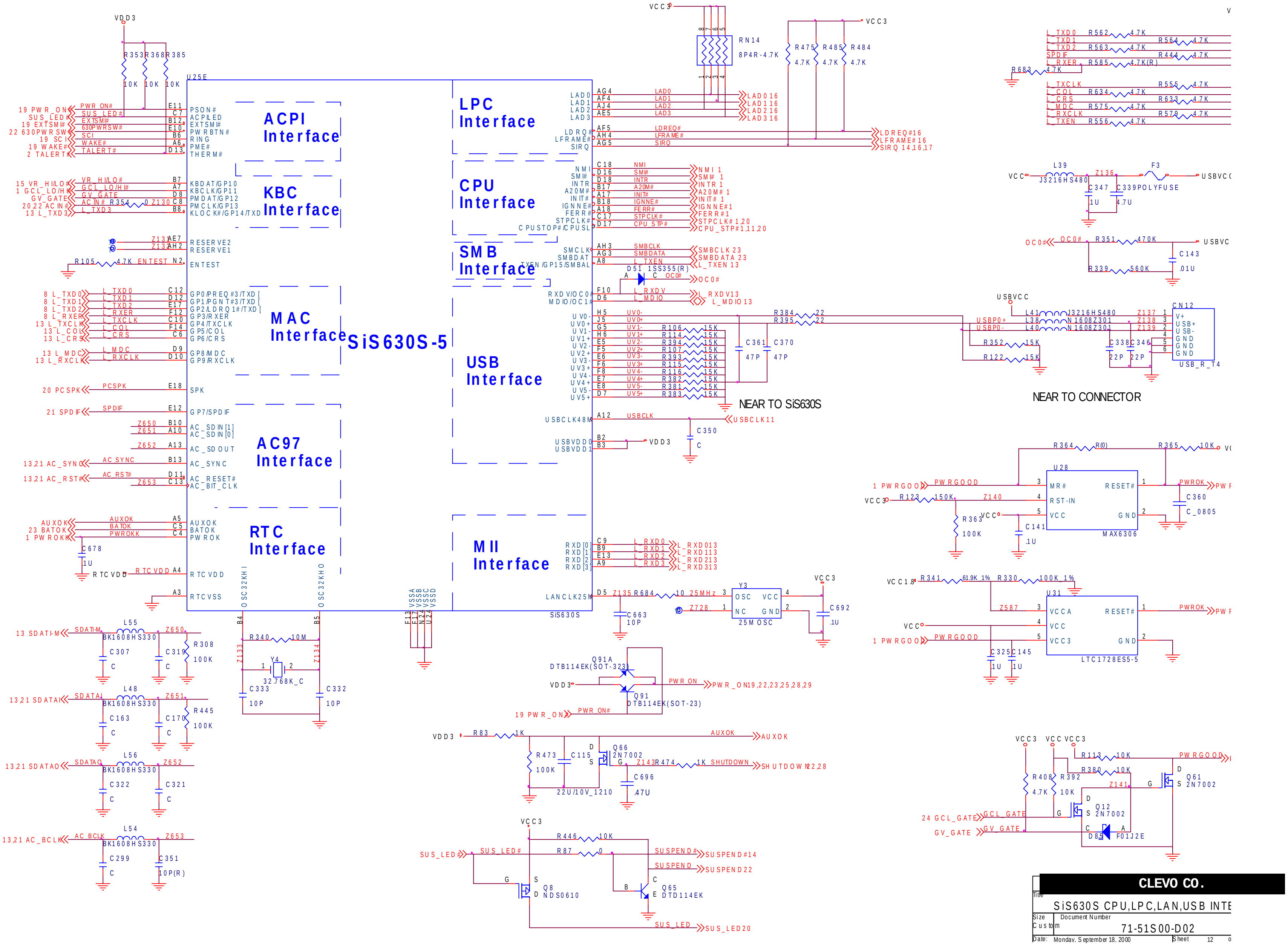
(FS3) SW2-4	(FS2) SW2-3	(FS1) SW2-2	(FS0) SW2-1	CPU (MHz)	SDRAM (MHz)	PCI (MHz)	REF (MHz)
0	0	0	1	100	100	33.33	14.318
0	1	0	1	100	133	33.33	14.318
0	1	1	1	133	133	33.33	14.318

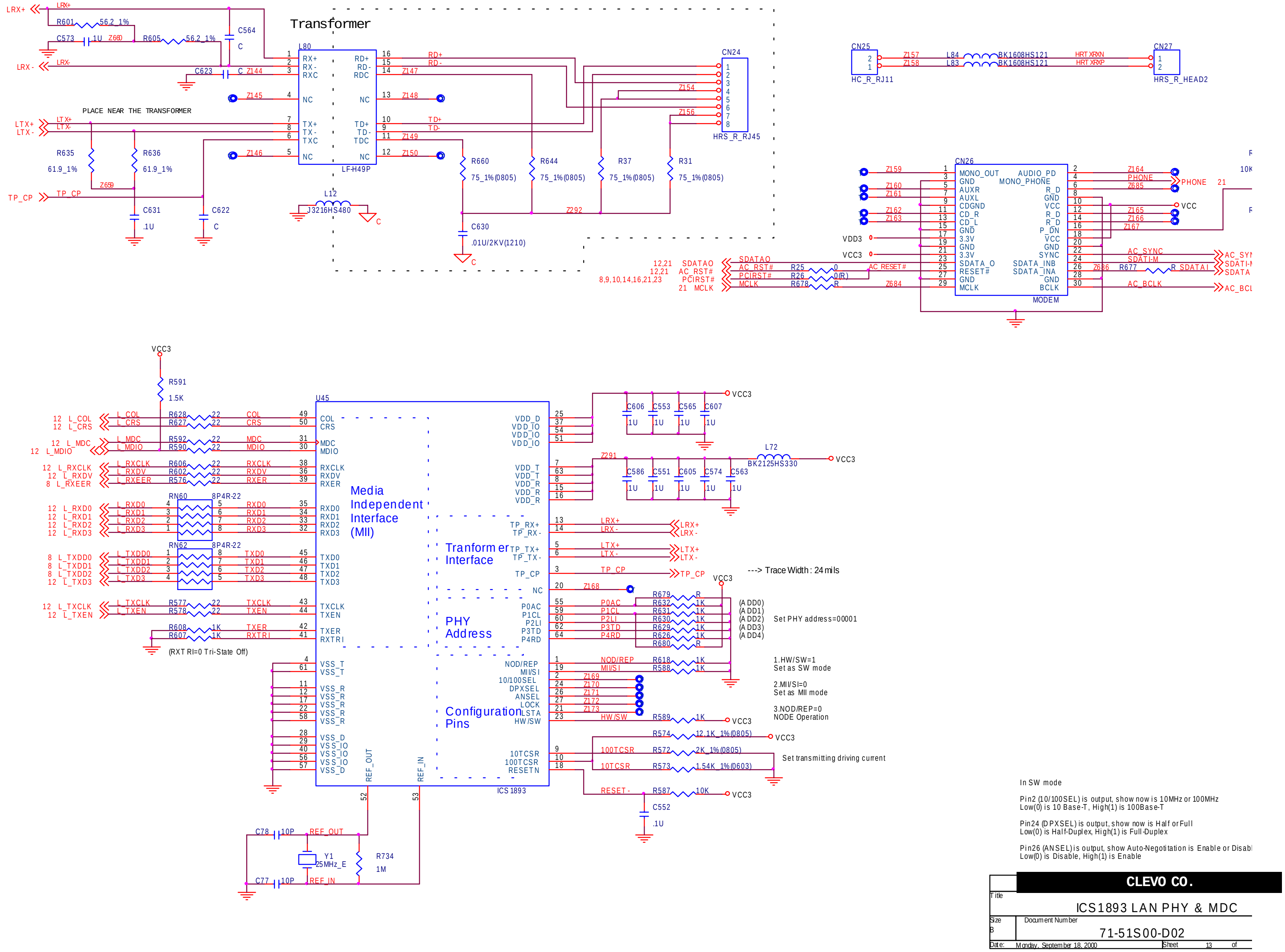
NOTE: PCICLK <37.5MHz

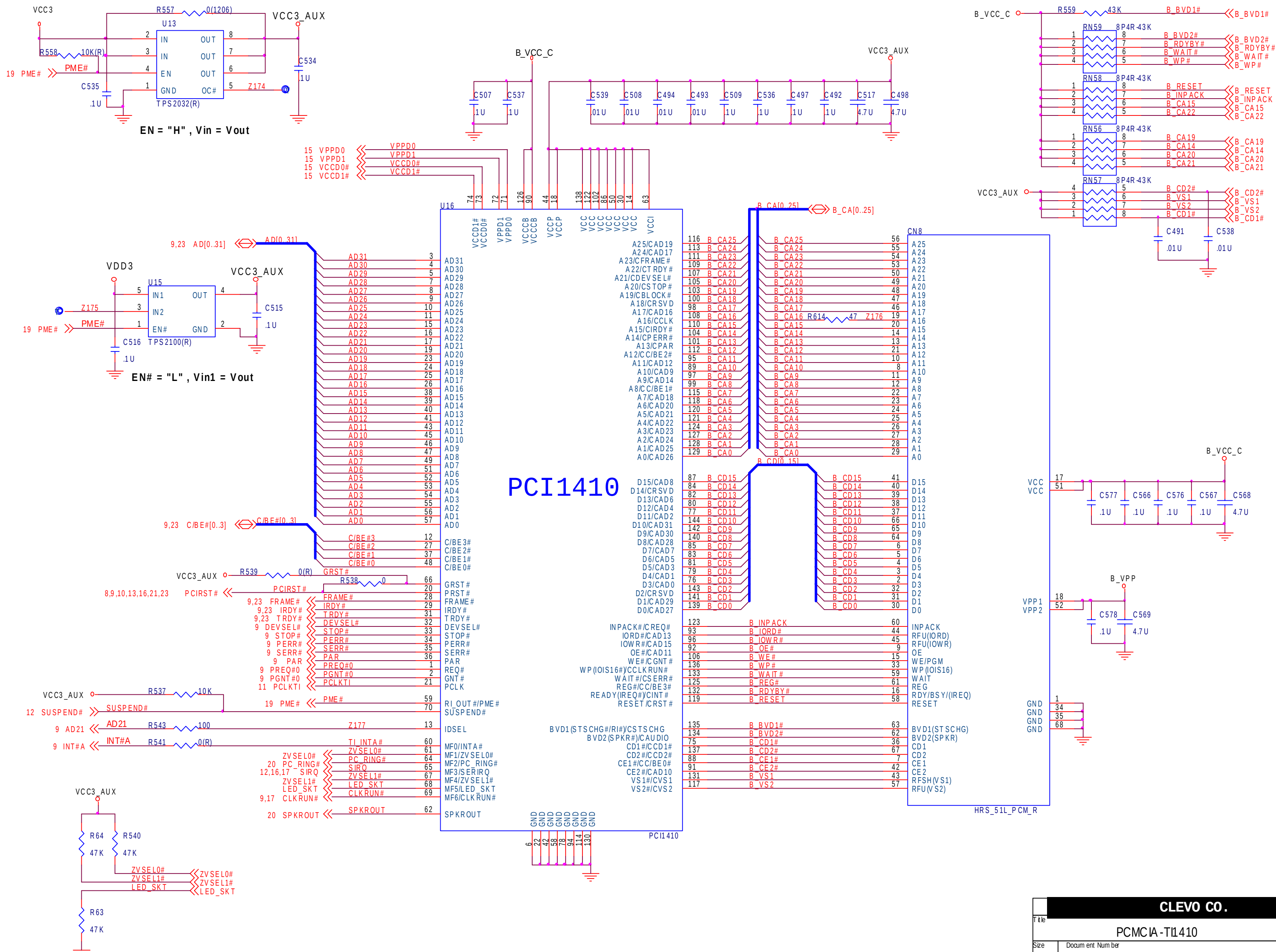
0 = OFF
1 = ON

CLEVO CO.

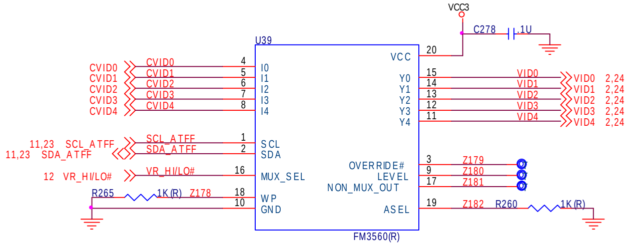
Title	CLOCK GENERATOR	
Size: Custom	Document Number: 71-51S00-D02	Rev: A
Date: Monday, September 18, 2000	Sheet 11 of 29	

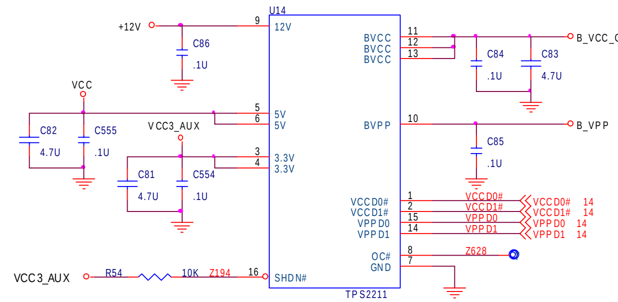

ACPI Interface
KBC Interface
MAC Interface
AC97 Interface
RTC Interface
SiS630S-5
LPC Interface
CPU Interface
SMB Interface
USB Interface
MII Interface
U25E
NEAR TO SiS630S
NEAR TO CONNECTOR
MAX6306
LTC1728ES5-5
CLEVO CO.
SiS630S CPU,LPC,LAN,USB INTE
71-51S00-D02
Date: Monday, September 18, 2000
Sheet 12

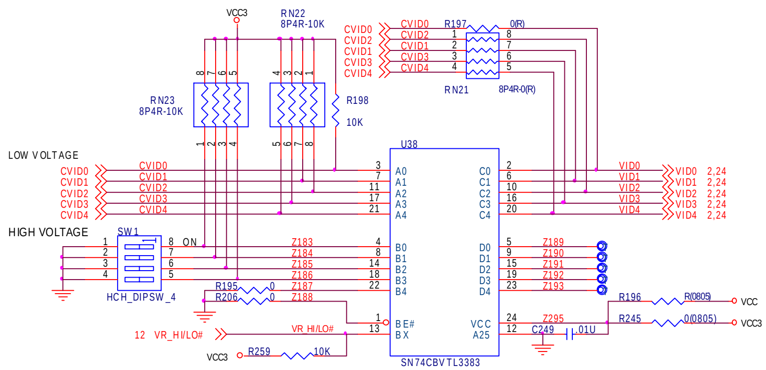

Transformer
L80
LF-H49P
PLACE NEAR THE TRANSFORMER
CN24
HRS_R_RJ45
CN25
HC_R_RJ11
CN27
HRS_R_HEAD2
CN26
MODEM
U45
ICS1893
Media Independent Interface (MII)
Tranformer Interface
PHY Address
Configuration Pins
---> Trace Width : 24 mils
Set PHY address=00001
1.HW/SW=1
Set as SW mode
2.MII/SI=0
Set as MII mode
3.NOD/REP=0
NODE Operation
Set transmitting driving current
(RXTRI=0 Tri-State Off)
In SW mode
Pin2 (10/100SEL) is output, show now is 10MHz or 100MHz
Low(0) is 10 Base-T, High(1) is 100Base-T
Pin24 (DPXSEL) is output, show now is Half or Full
Low(0) is Half-Duplex, High(1) is Full-Duplex
Pin26 (ANSEL) is output, show Auto-Negotitation is Enable or Disabl
Low(0) is Disable, High(1) is Enable
CLEVO CO.
Title
ICS1893 LAN PHY & MDC
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	CLEVO CO.
Title	PCMCIA-TI1410
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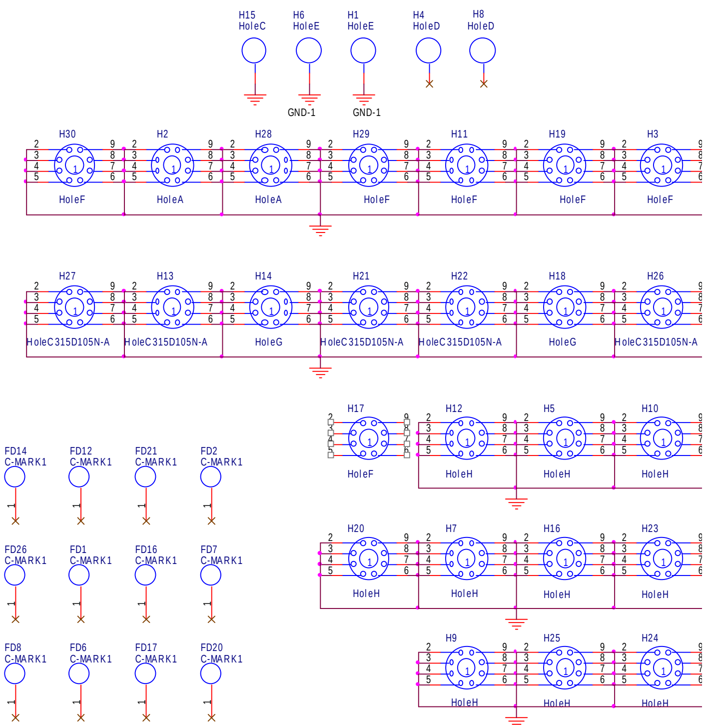






High : B0 ... B4-->C0 ... C4

Low : A0 ... A4-->C0 ... C4

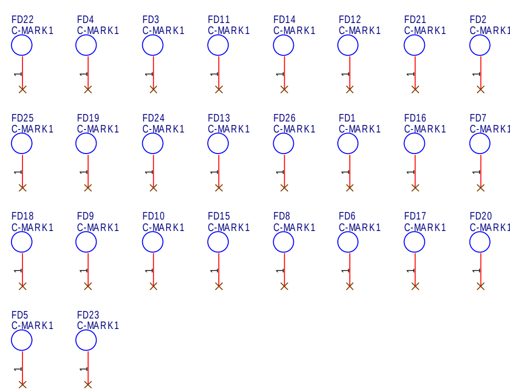


CPU VRM SELECT TABLE(Battery Life Mode)

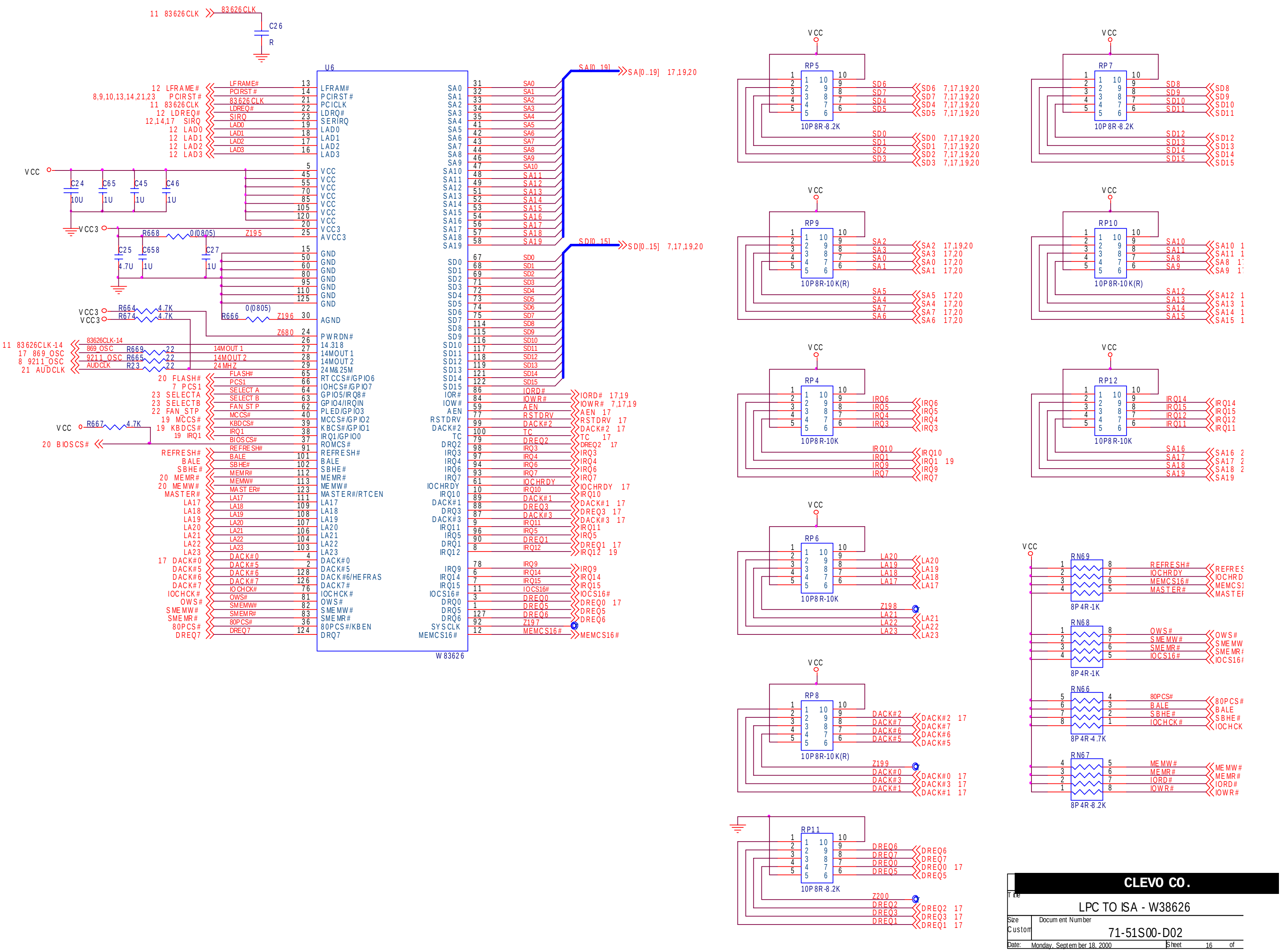
VID[4:0]	VCC_Core	VID[4:0]	VCC_Core
11111	NO CPU	01111	NO CPU
11110	0.925V	01110	1.30V
11101	0.950V	01101	1.35V
11100	0.975V	01100	1.40V
11011	1.000V	01011	1.45V
11010	1.025V	01010	1.50V
11001	1.050V	01001	1.55V
11000	1.075V	01000	1.60V
10111	1.100V	00111	1.65V
10110	1.125V	00110	1.70V
10101	1.150V	00101	1.75V
10100	1.175V	00100	1.80V
10011	1.200V	00011	1.85V
10011	1.225V	00010	1.90V
10001	1.250V	00001	1.95V
10000	1.275V	00000	2.00V

CPU VRM SELECT TABLE(Performance Optimized)

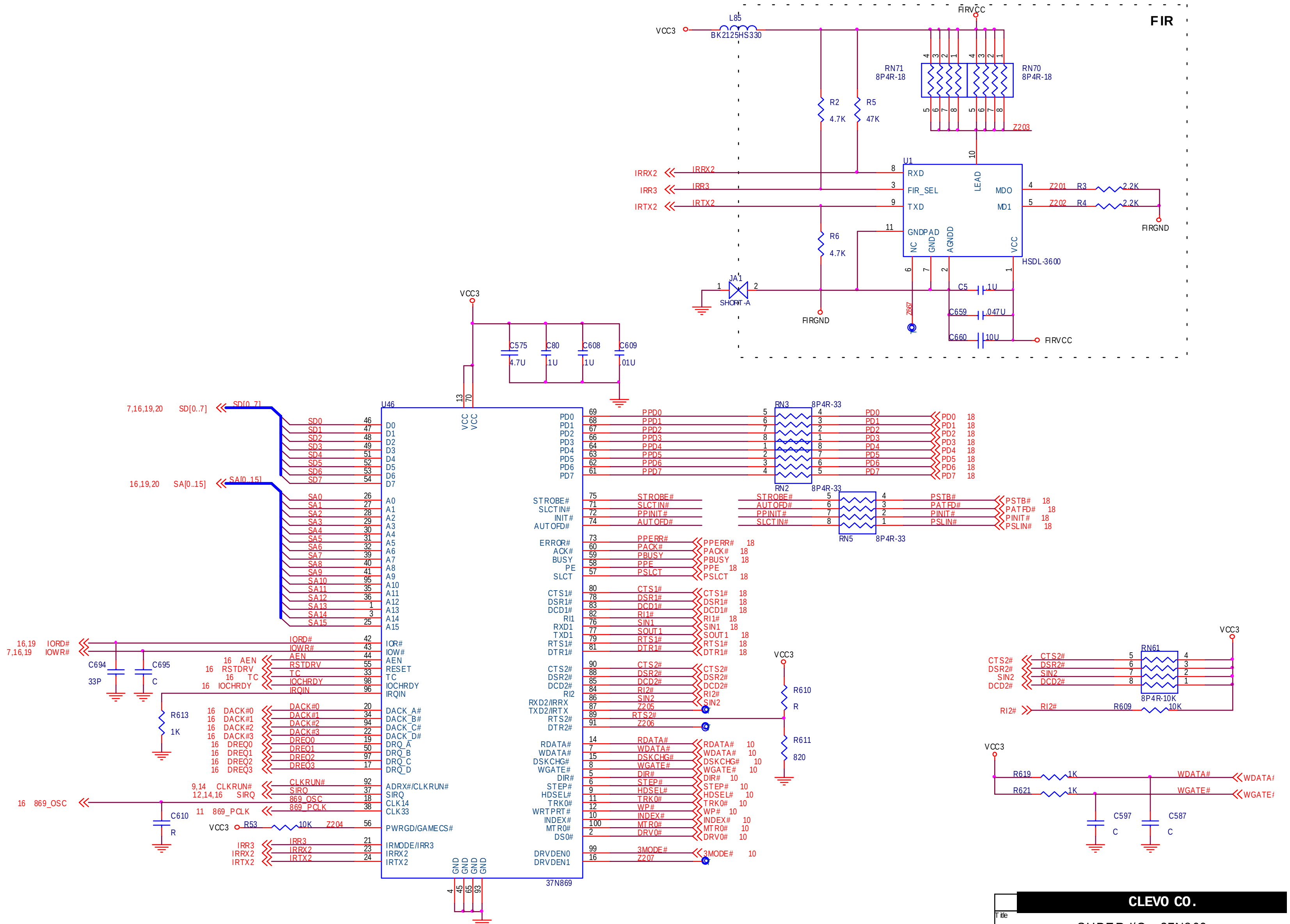
SW1-4	SW1-3	SW1-2	SW1-1	V_CORE
ON	ON	ON	ON	2.00V
ON	ON	ON	OFF	1.95V
ON	ON	OFF	ON	1.90V
ON	ON	OFF	OFF	1.85V
ON	OFF	ON	ON	1.80V
ON	OFF	ON	OFF	1.75V
ON	OFF	OFF	ON	1.70V
ON	OFF	OFF	OFF	1.65V
OFF	ON	ON	ON	1.60V
OFF	ON	ON	OFF	1.55V
OFF	ON	OFF	ON	1.50V
OFF	ON	OFF	OFF	1.45V
OFF	OFF	ON	ON	1.40V
OFF	OFF	ON	OFF	1.35V
OFF	OFF	OFF	ON	1.30V
OFF	OFF	OFF	OFF	NO CPU



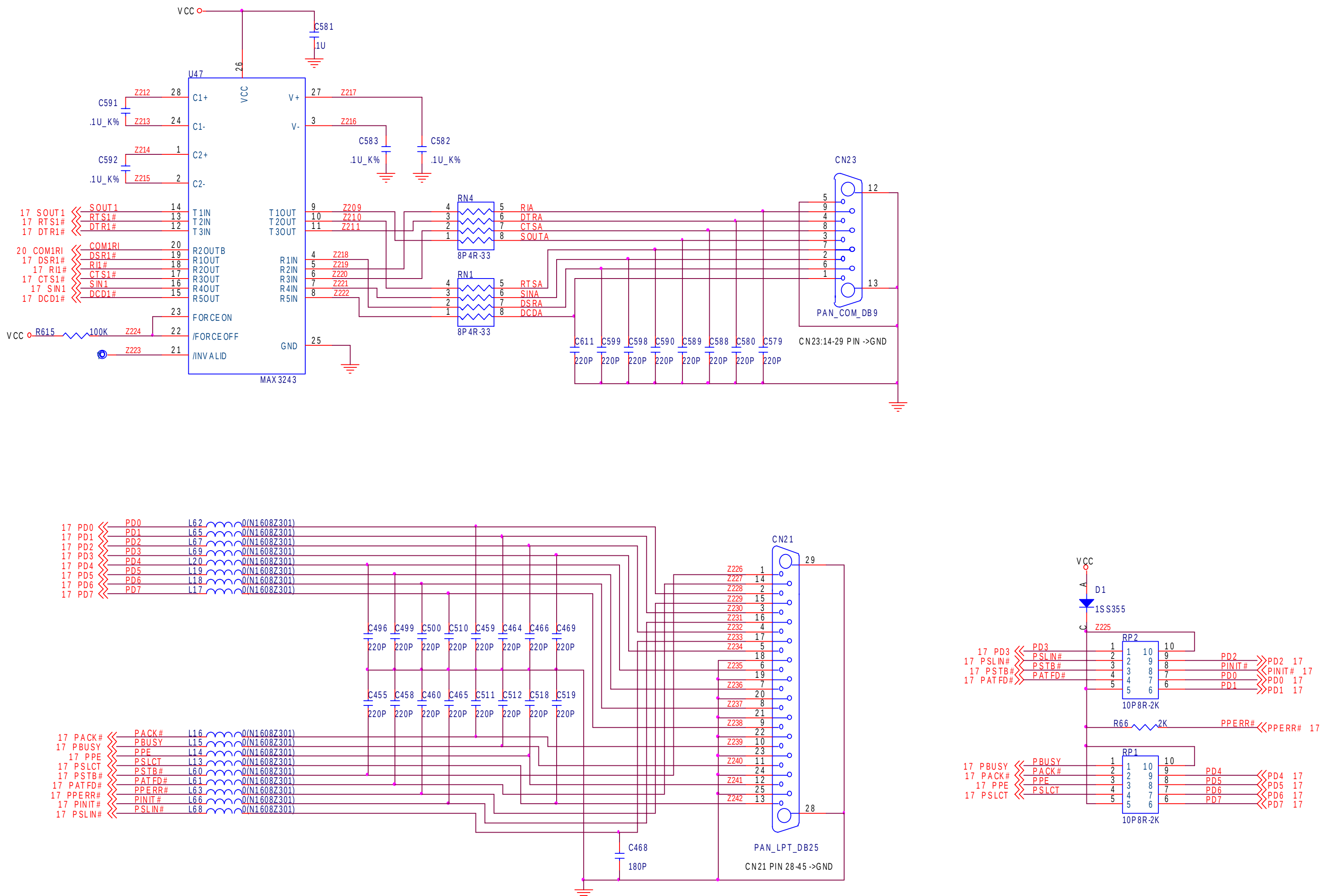
	CLEVO CO.
Title	PCMCIA POWER SWITCH
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U6
W83626
SA[0..19]
SD[0..15]
RP5
RP7
RP9
RP10
RP4
RP12
RP6
RP8
RP11
RN69
RN68
RN66
RN67
CLEVO CO.
Title
LPC TO ISA - W38626
Size
Custom
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CLEVO CO.	
Title	SUPER I/O - 37N869
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CLEVO CO.

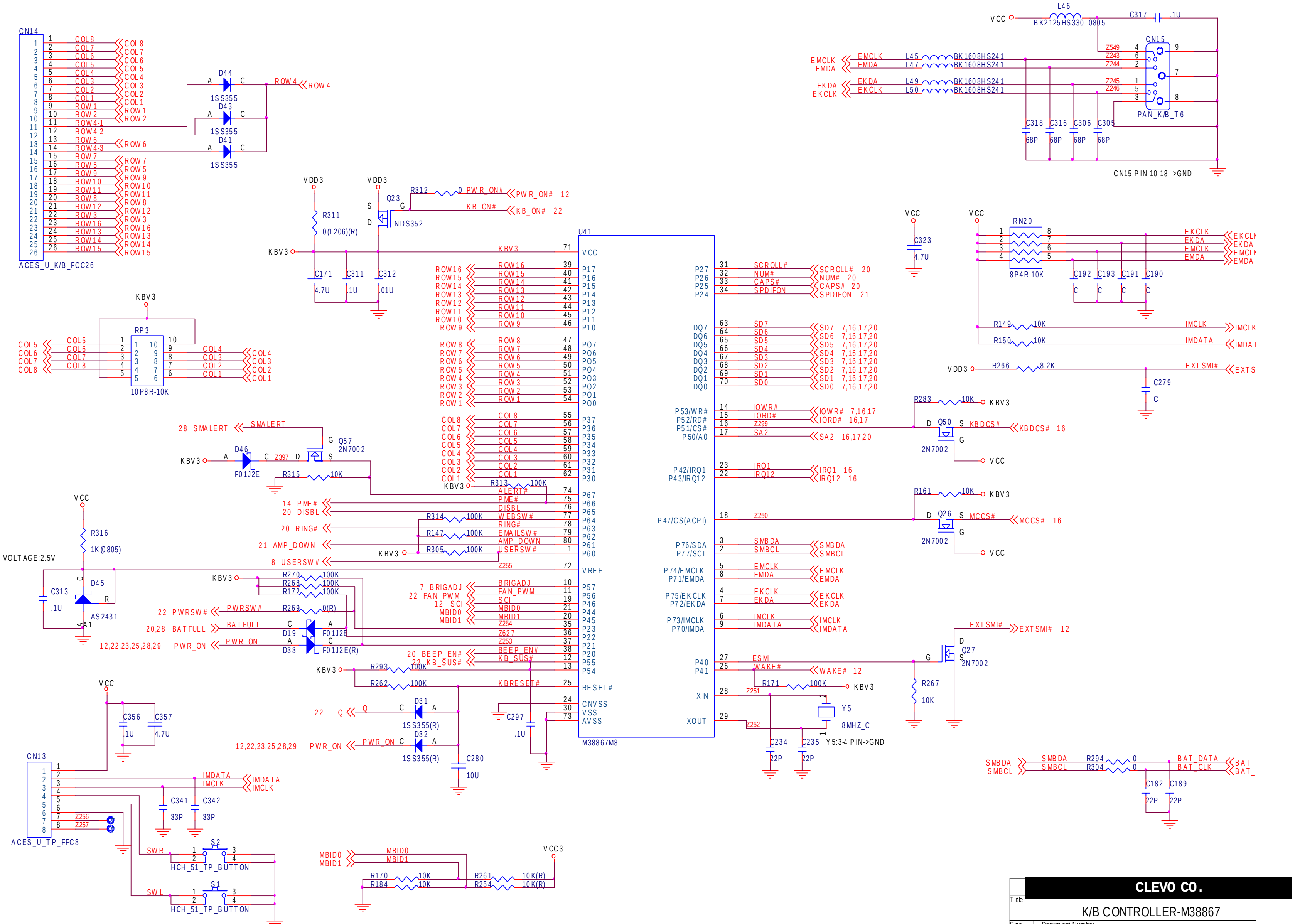
Title: COM & PRINT PORT

Size: B

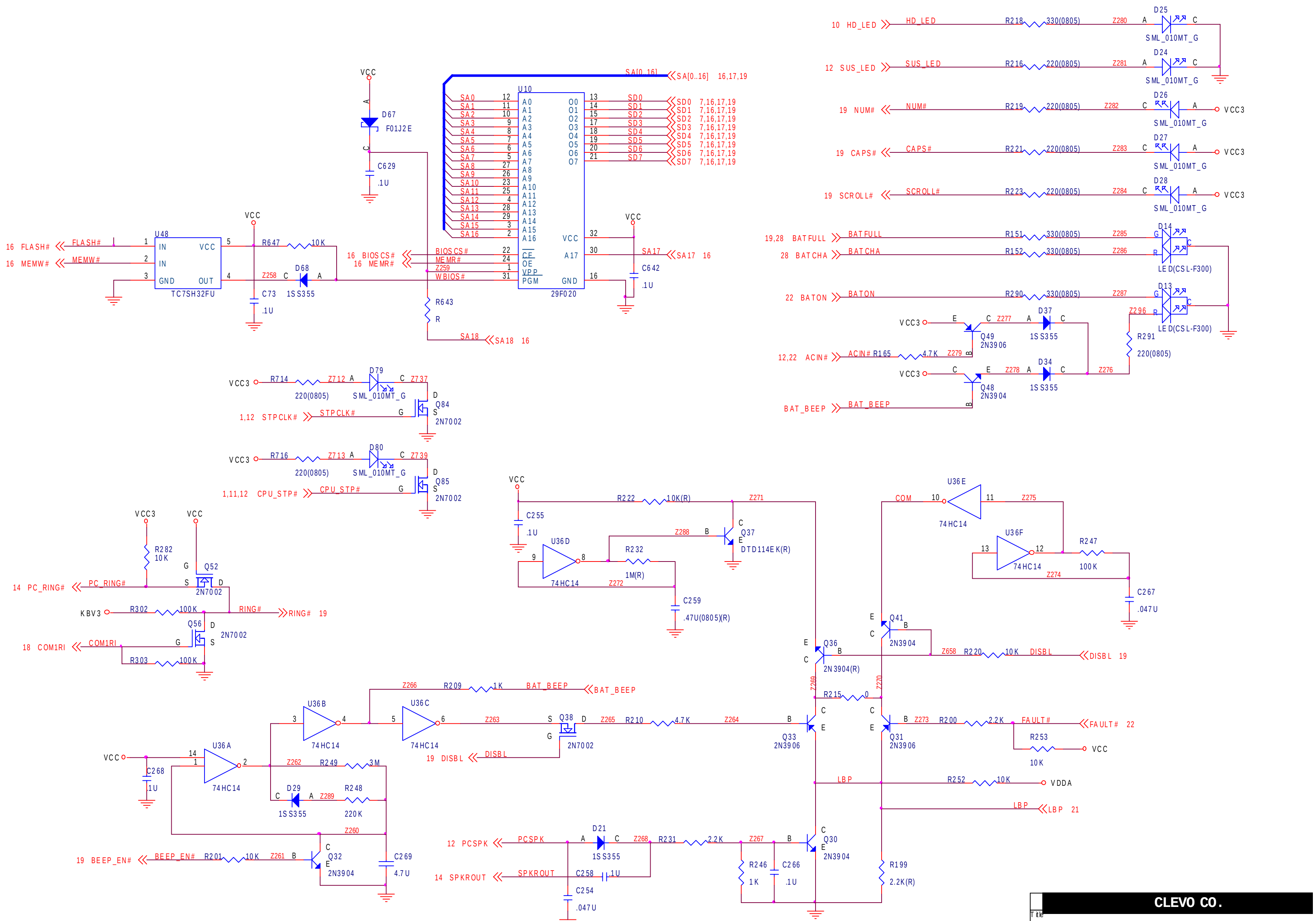
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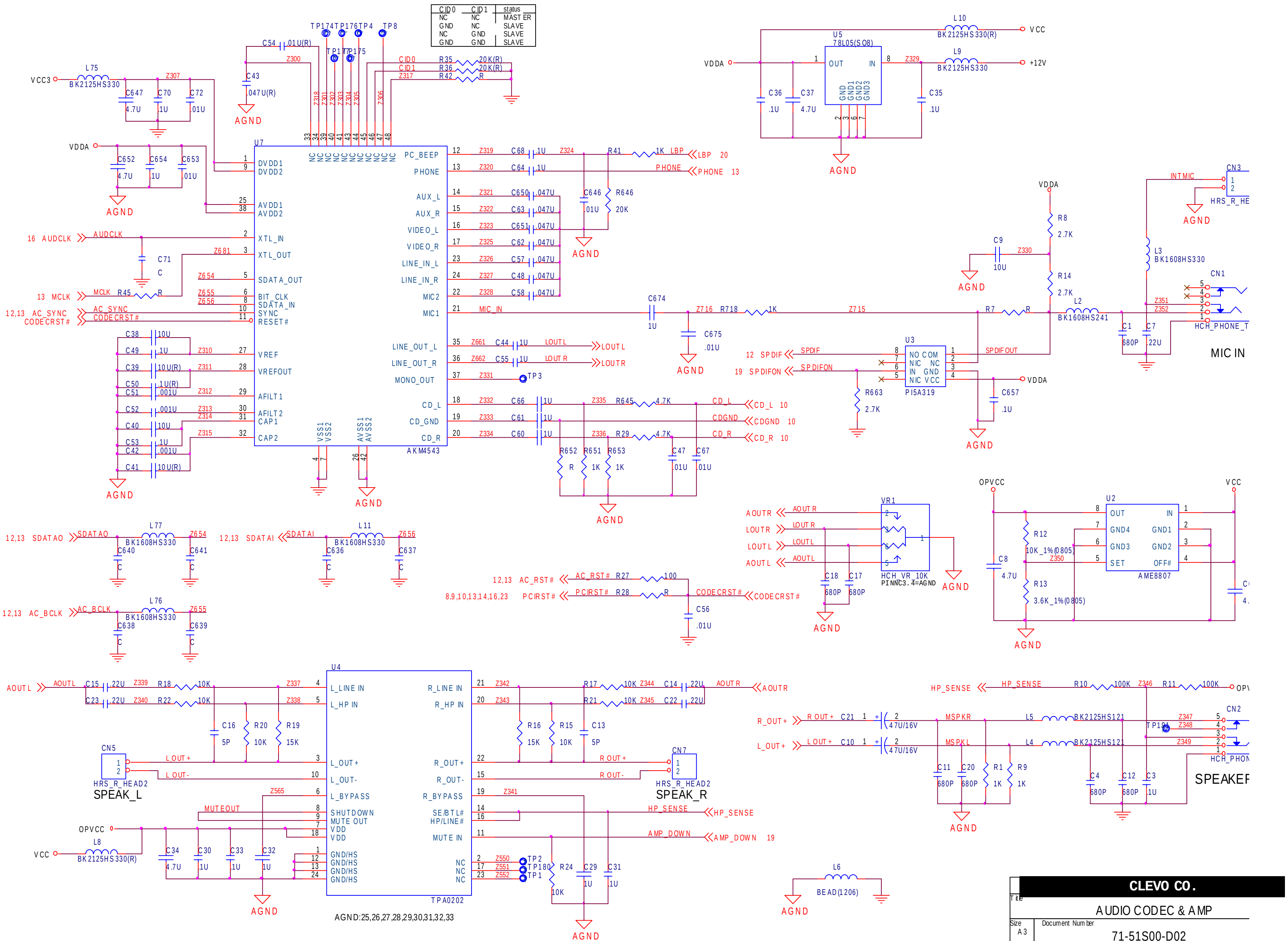


CLEVO CO.	
Title	K/B CONTROLLER-M38867
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CLEVO CO.

Title	BIOS & LED INDICATOR
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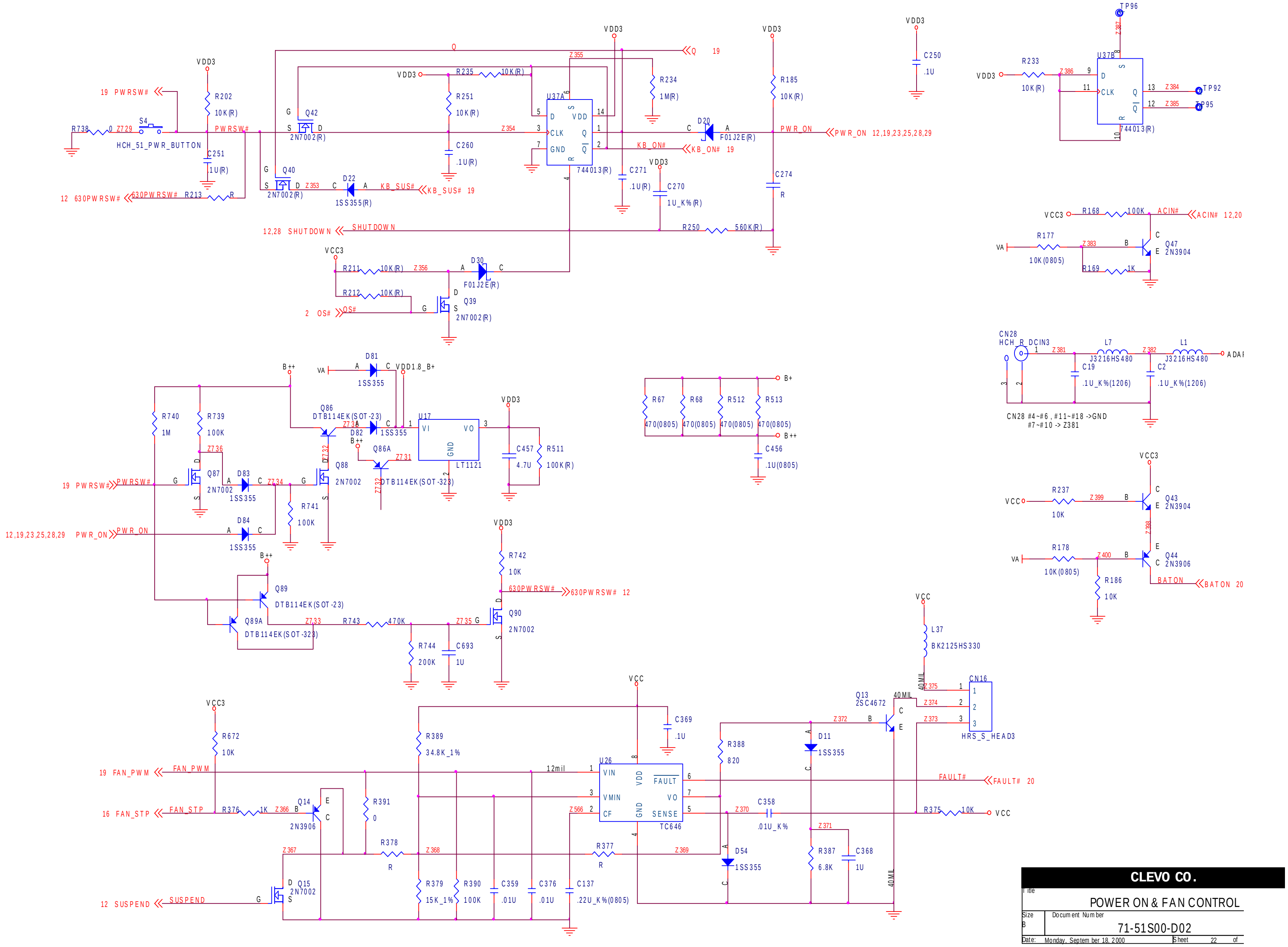
CLEVO CO.

Title: AUDIO CODEC & AMP

Size: A3

Document Number: 71-51S00-D02

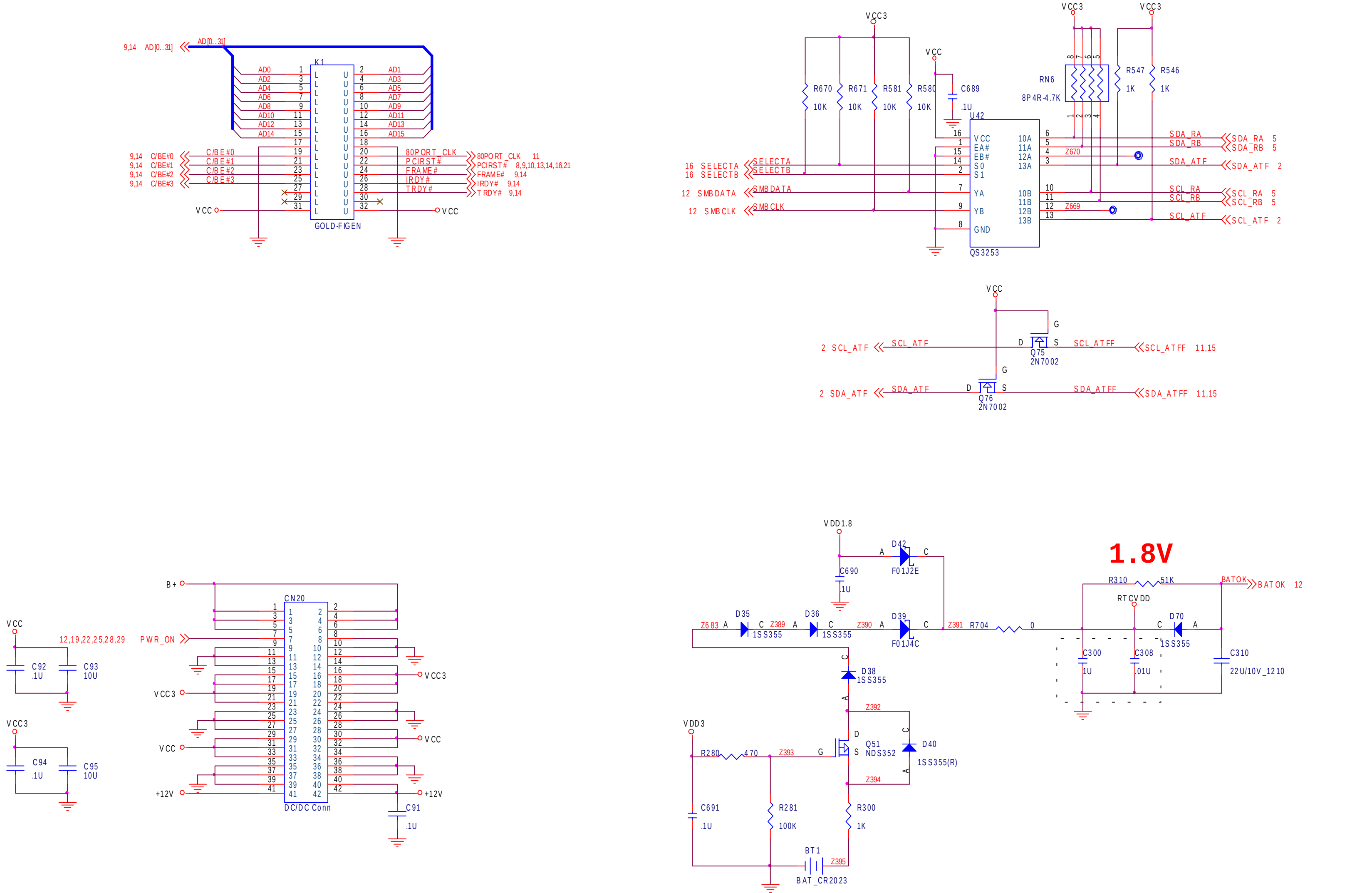
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CLEVO CO.

Title: POWER ON & FAN CONTROL

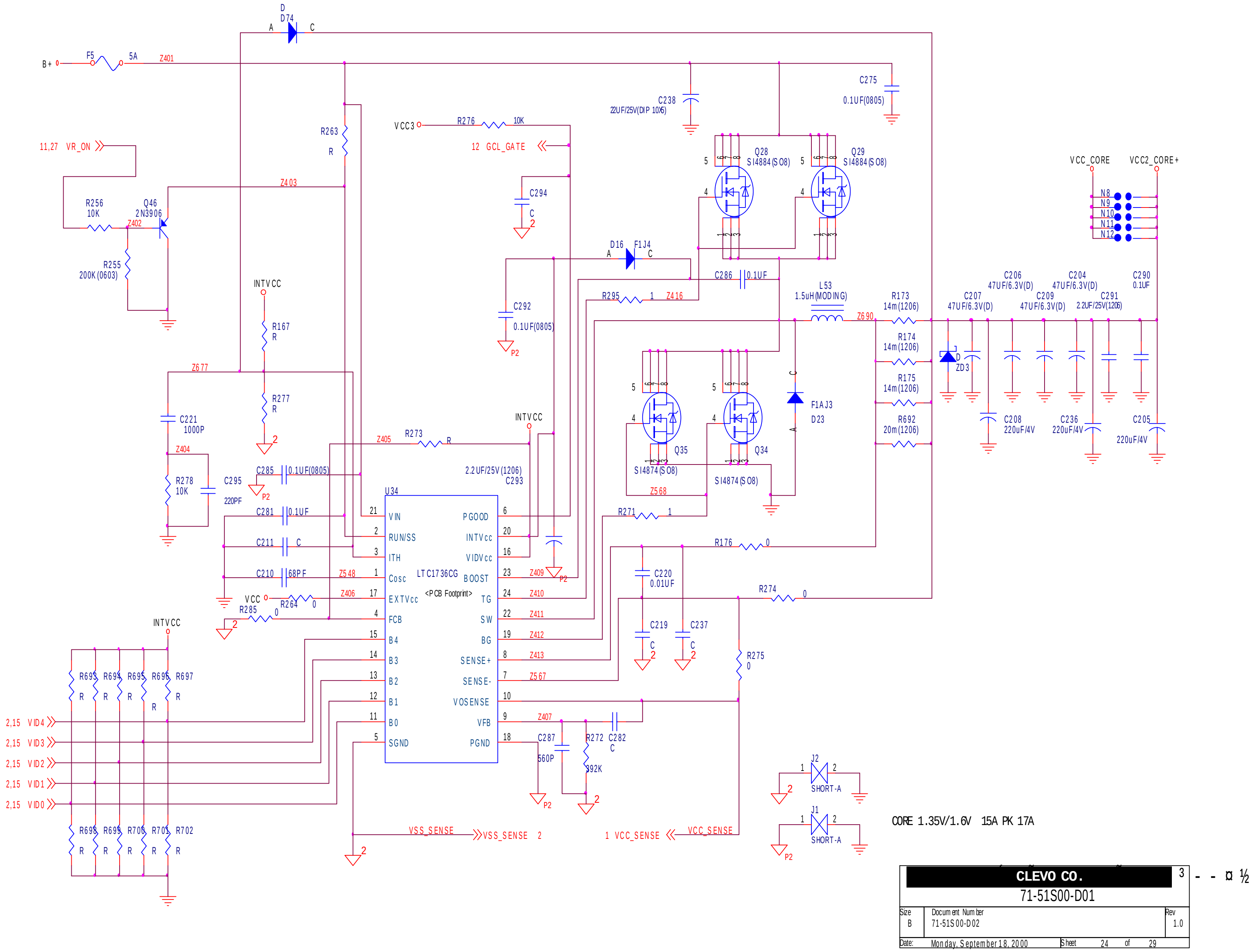
Size	Document Number	
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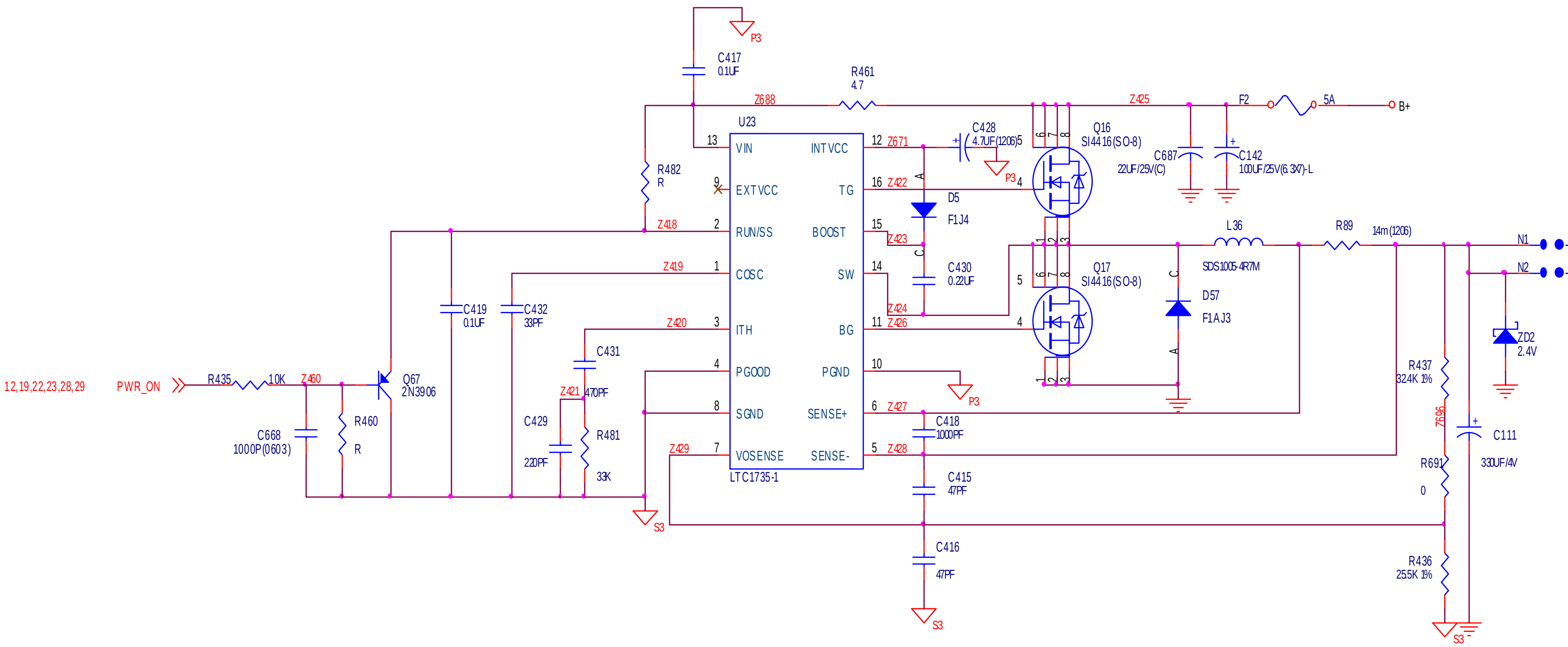


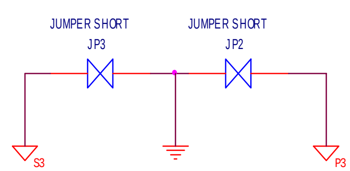
CLEVO CO.

Title: SMBUS & RTC POWER

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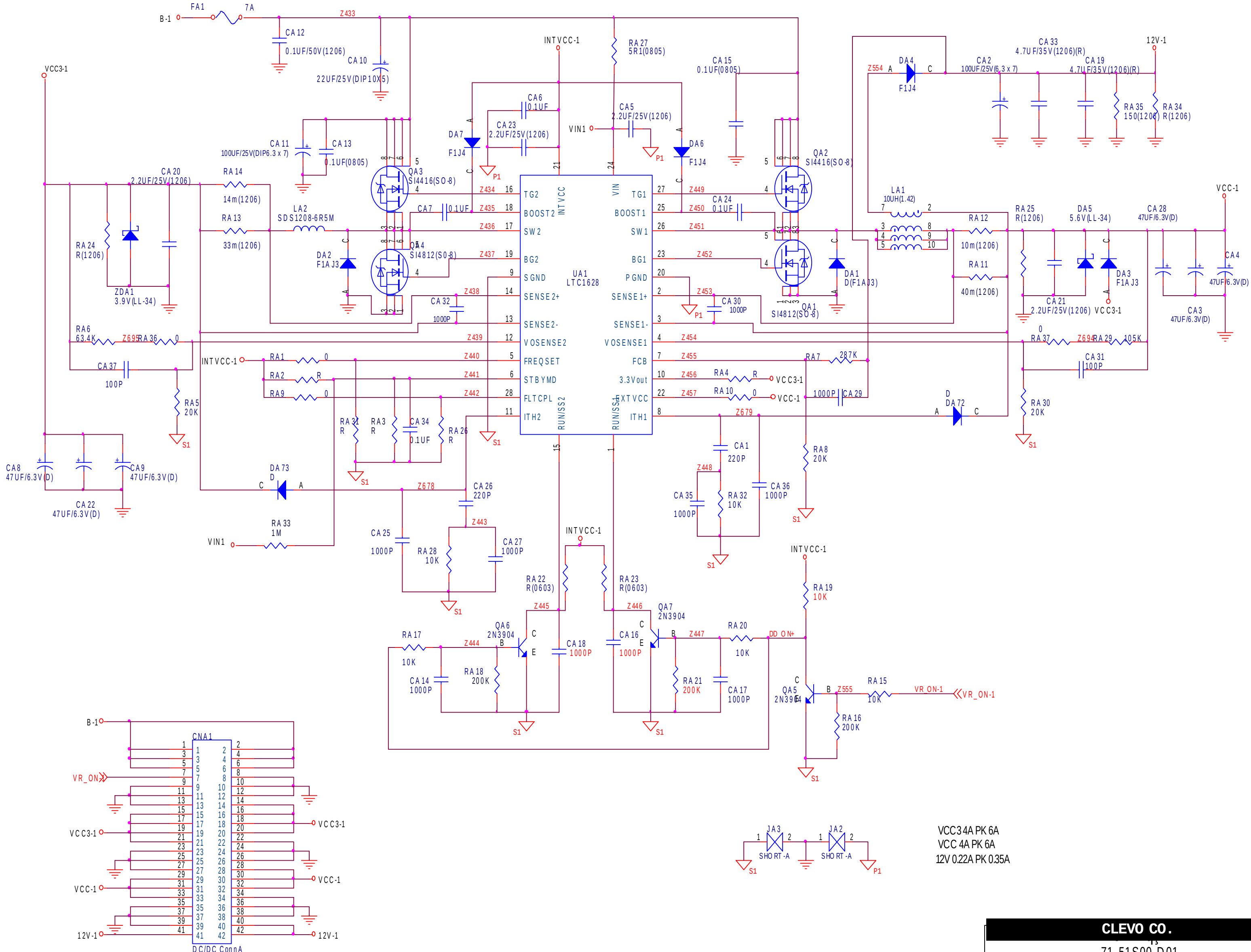

D74
B+
F5
5A
Z401
11,27 VR_ON
R256 10K
Q46 2N3906
Z402
R255 200K(0603)
Z403
R263 R
VCC3
R276 10K
12 GCL_GATE
C294 C
C238 22UF/25V(DIP 1016)
C275 0.1UF(0805)
Q28 SI4884(SO8)
Q29 SI4884(SO8)
VCC_CORE
VCC2_CORE+
N8
N9
N10
N11
N12
D16 F1J4
C286 0.1UF
C292 0.1UF(0805)
R295 1 Z416
L53 1.5uH(MODING)
Z690
R173 14m(1206)
R174 14m(1206)
R175 14m(1206)
R692 20m(1206)
C206 47UF/6.3V(D)
C204 47UF/6.3V(D)
C290 0.1UF
C207 47UF/6.3V(D)
C209 47UF/6.3V(D)
C291 2.2UF/25V(1206)
ZD3
C208 220uF/4V
C236 220uF/4V
C205 220uF/4V
INTVCC
R167 R
R277 R
Z677
C221 1000P
Z404
R278 10K
C295 220PF
Z405
R273 R
C285 0.1UF(0805)
2.2UF/25V(1206) C293
Q35 SI4874(SO8)
Q34 SI4874(SO8)
F1AJ3 D23
Z568
U34
LTC1736CG
<PCB Footprint>
VIN PGOOD
RUN/SS INTVcc
ITH VIDVcc
Cosc BOOST
EXTVcc TG
FCB SW
B4 BG
B3 SENSE+
B2 SENSE-
B1 VOSENSE
B0 VFB
SGND PGND
C281 0.1UF
C211 C
C210 68PF
Z548
Z406
VCC
R264 0
R285 0
Z409
Z410
Z411
Z412
Z413
Z567
Z407
R271 1
R176 0
C220 0.01UF
R274 0
C219 C
C237 C
R275 0
C287 560P
R272 392K
C282 C
R693 R694 R695 R696 R697
R698 R699 R700 R701 R702
2,15 VID4
2,15 VID3
2,15 VID2
2,15 VID1
2,15 VID0
VSS_SENSE
VSS_SENSE 2
1 VCC_SENSE
VCC_SENSE
J2 SHORT-A
J1 SHORT-A
CORE 1.35V/1.6V 15A PK 17A
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VCC1.8 2A PK 3A

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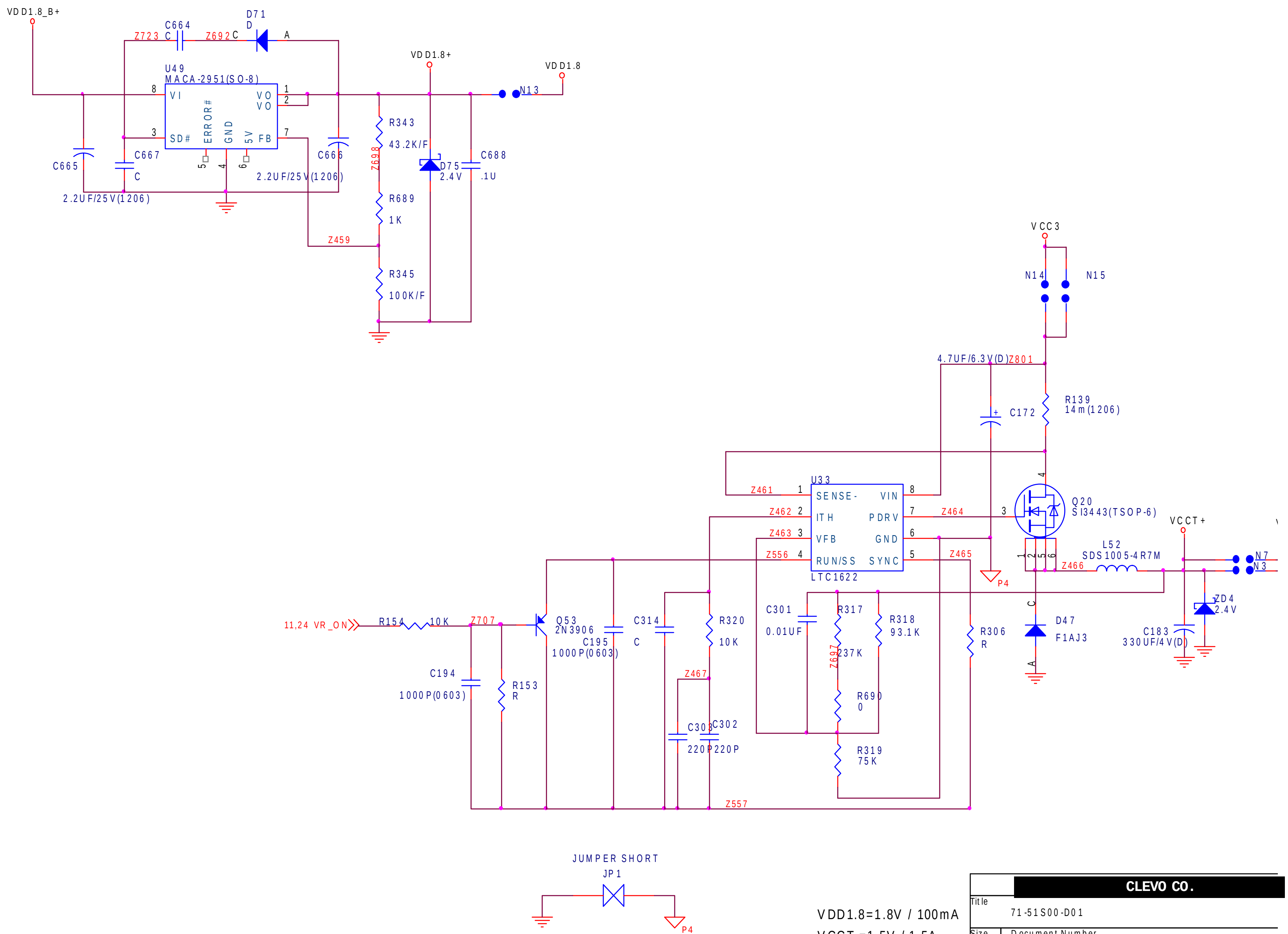
VCC3 4A PK 6A
VCC 4A PK 6A
12V 0.22A PK 0.35A

CLEVO CO.

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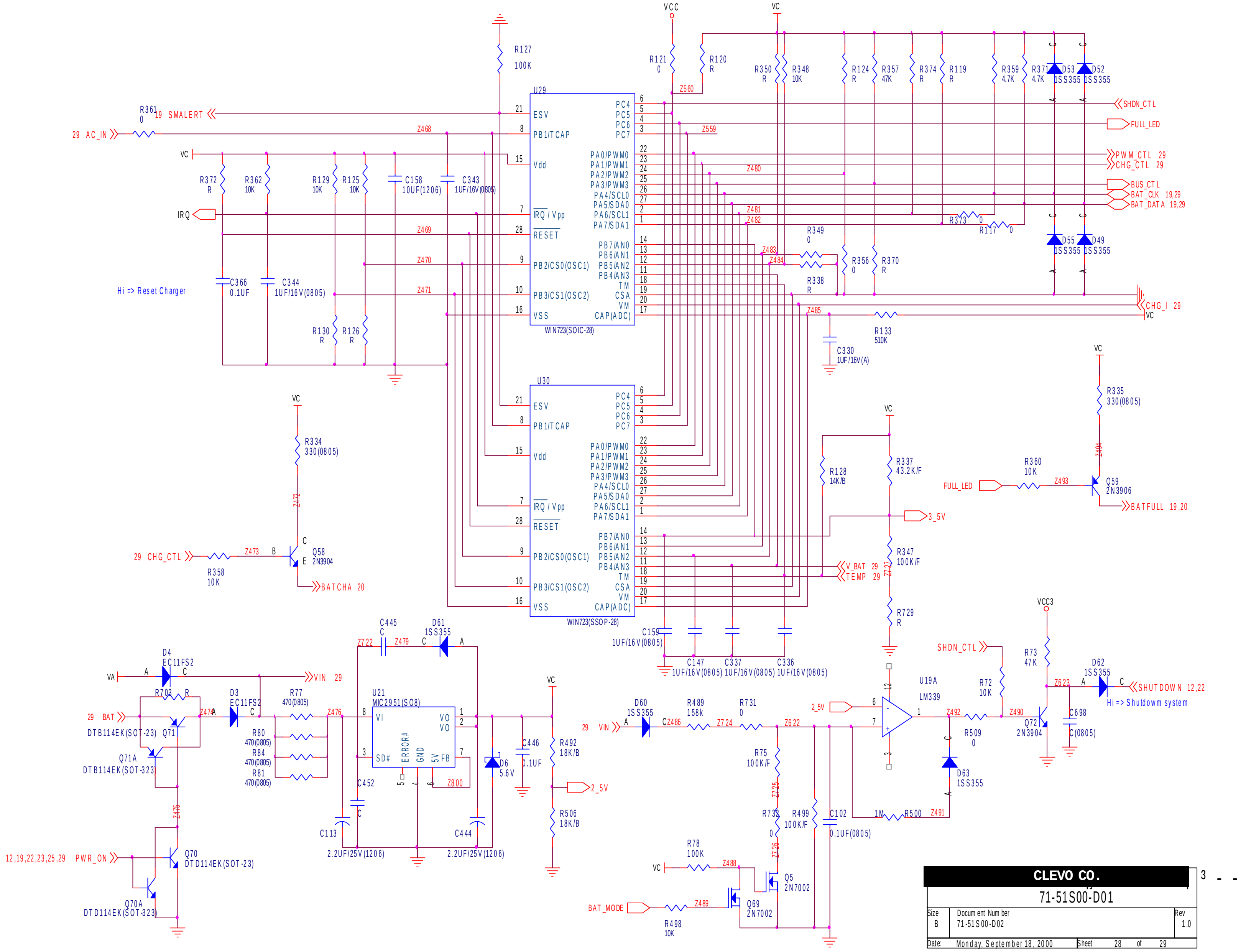
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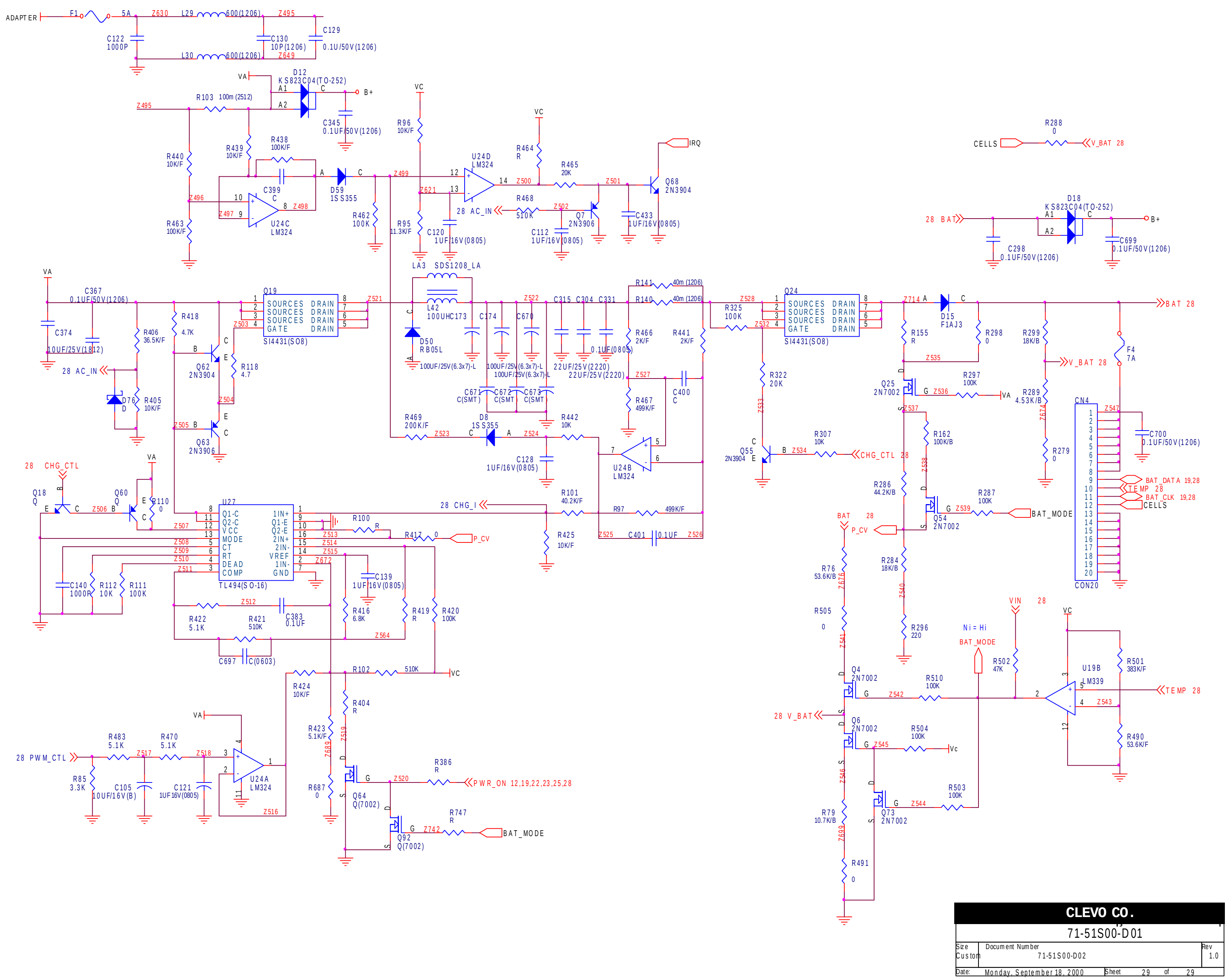


VDD1.8=1.8V / 100mA

VCCT =1.5V / 1.5A

	CLEVO CO.
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VCC
VC
R127
100K
U29
ESV
PB1/TCAP
Vdd
IRQ / Vpp
RESET
PB2/CS0(OSC1)
PB3/CS1(OSC2)
VSS
PC4
PC5
PC6
PC7
PA0/PWM0
PA1/PWM1
PA2/PWM2
PA3/PWM3
PA4/SCL0
PA5/SDA0
PA6/SCL1
PA7/SDA1
PB7/AN0
PB6/AN1
PB5/AN2
PB4/AN3
TM
CSA
VM
CAP(ADC)
WIN723(SOIC-28)
U30
WIN723(SSOP-28)
R361
19 SMALERT
29 AC_IN
IRQ
Hi => Reset Charger
R372
R362
R129
R125
C158
10UF(1206)
C343
1UF/16V(0805)
C366
0.1UF
C344
1UF/16V(0805)
R130
R126
R121
R120
R350
R348
R124
R357
R374
R119
R359
R371
D53
D52
1SS355
SHDN_CTL
FULL_LED
PWM_CTL 29
CHG_CTL 29
BUS_CTL
BAT_CLK 19,29
BAT_DATA 19,29
R373
R117
D55
D49
R349
R356
R370
R338
CHG_I 29
R133
510K
C330
1UF/16V(A)
R334
330(0805)
29 CHG_CTL
R358
10K
Q58
2N3904
BATCHA 20
R335
330(0805)
R360
10K
Q59
2N3906
BATFULL 19,20
R128
14K/B
R337
43.2K/F
3_5V
R347
100K/F
V_BAT 29
TEMP 29
R729
C159
1UF/16V(0805)
C147
C337
C336
C445
D61
1SS355
D4
EC11FS2
VA
VIN 29
29 BAT
R703
D3
EC11FS2
R77
470(0805)
R80
R84
R81
DTB114EK(SOT-23)
Q71
Q71A
DTB114EK(SOT-323)
U21
MIC2951(SO8)
VI
VO
SD#
ERROR#
GND
5V_FB
C113
C452
2.2UF/25V(1206)
C444
D6
5.6V
C446
0.1UF
R492
18K/B
2_5V
R506
18K/B
12,19,22,23,25,29 PWR_ON
Q70
DTD114EK(SOT-23)
Q70A
DTD114EK(SOT-323)
29 VIN
D60
1SS355
R489
158k
R731
0
R75
100K/F
R732
0
R499
100K/F
C102
0.1UF(0805)
R78
100K
Q5
2N7002
Q69
2N7002
BAT_MODE
R498
10K
U19A
LM339
SHDN_CTL
R72
10K
R73
47K
VCC3
D62
1SS355
SHUTDOWN 12,22
Hi => Shutdowm system
Q72
2N3904
R509
0
C698
C(0805)
D63
1SS355
1M
R500
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ADAPTER
F1
5A
L29
600(1206)
L30
C122
1000P
C130
10P(1206)
C129
0.1U/50V(1206)
D12
KS823C04(TO-252)
B+
R103
100m (2512)
C345
0.1UF/50V(1206)
R440
10K/F
R439
10K/F
R438
100K/F
C399
U24C
LM324
D59
1SS355
R462
100K
R95
11.3K/F
R96
10K/F
U24D
LM324
C120
1UF/16V(0805)
28 AC_IN
R464
R465
20K
R468
510K
Q7
2N3906
C112
1UF/16V(0805)
C433
1UF/16V(0805)
Q68
2N3904
IRQ
R463
100K/F
C367
0.1UF/50V(1206)
C374
10UF/25V(1812)
Q19
SI4431(SO8)
SOURCES
DRAIN
GATE
R406
36.5K/F
R418
4.7K
Q62
2N3904
R118
4.7
D76
R405
10K/F
Q63
2N3906
LA3
SDS1208_LA
L42
100UHC173
D50
RB05L
C174
C670
C315
C304
C331
100UF/25V(6.3x7)-L
22UF/25V(2220)
0.1UF(0805)
C671
C672
C673
C(SMT)
R141
R140
40m (1206)
R466
2K/F
R441
2K/F
R467
499K/F
C400
R469
200K/F
D8
1SS355
R442
10K
C128
1UF/16V(0805)
U24B
LM324
R101
40.2K/F
R97
499K/F
R425
10K/F
C401
0.1UF
28 CHG_CTL
Q18
Q60
R110
U27
TL494(SO-16)
Q1-C
Q2-C
VCC
MODE
CT
RT
DEAD
COMP
1IN+
Q1-E
Q2-E
2IN+
2IN-
VREF
1IN-
GND
R100
R417
P_CV
28 CHG_I
C139
1UF/16V(0805)
C140
1000P
R112
10K
R111
100K
R422
5.1K
R421
510K
C383
0.1UF
C697
C(0603)
R416
6.8K
R419
R420
100K
R424
10K/F
R102
510K
R404
R423
5.1K/F
R687
0
Q64
Q(7002)
R386
PWR_ON 12,19,22,23,25,28
R747
BAT_MODE
Q92
Q(7002)
28 PWM_CTL
R483
5.1K
R470
5.1K
R85
3.3K
C105
10UF/16V(B)
C121
1UF16V(0805)
U24A
LM324
R288
0
CELLS
V_BAT 28
D18
KS823C04(TO-252)
28 BAT
C298
0.1UF/50V(1206)
C699
0.1UF/50V(1206)
Q24
SI4431(SO8)
R325
100K
R322
20K
D15
F1AJ3
BAT 28
R155
R298
0
R299
18K/B
F4
7A
Q25
2N7002
R297
100K
R289
4.53K/B
R279
0
CN4
CON20
C700
0.1UF/50V(1206)
BAT_DATA 19,28
TEMP 28
BAT_CLK 19,28
Q55
2N3904
R307
10K
CHG_CTL 28
R162
100K/B
R286
44.2K/B
Q54
2N7002
R287
100K
R284
18K/B
R296
220
R76
53.6K/B
R505
0
Q4
2N7002
Q6
2N7002
28 V_BAT
R510
100K
R504
100K
VIN 28
Ni = Hi
R502
47K
U19B
LM339
R501
383K/F
R490
53.6K/F
Q73
2N7002
R503
100K
R79
10.7K/B
R491
0
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